MacWEEK's Graphic Arts Supplement

25 October 1988

GA

ISSUES IN TECHNOLOGY AND DESIGN

color pre-press

scanners

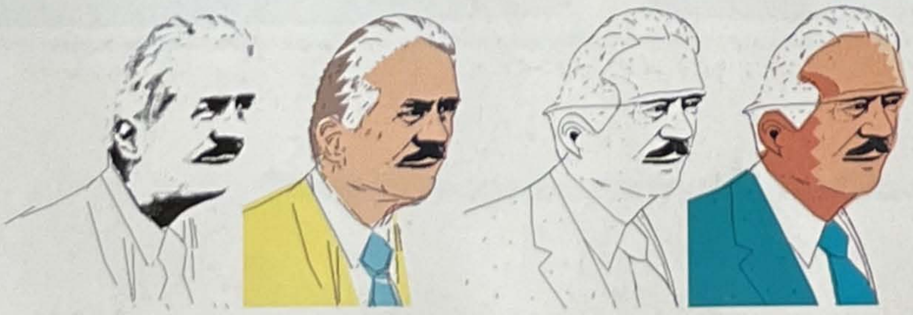
color printers

fonts

image processing

desktop video

slide presentations



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industrial designer
Raymond Loewy

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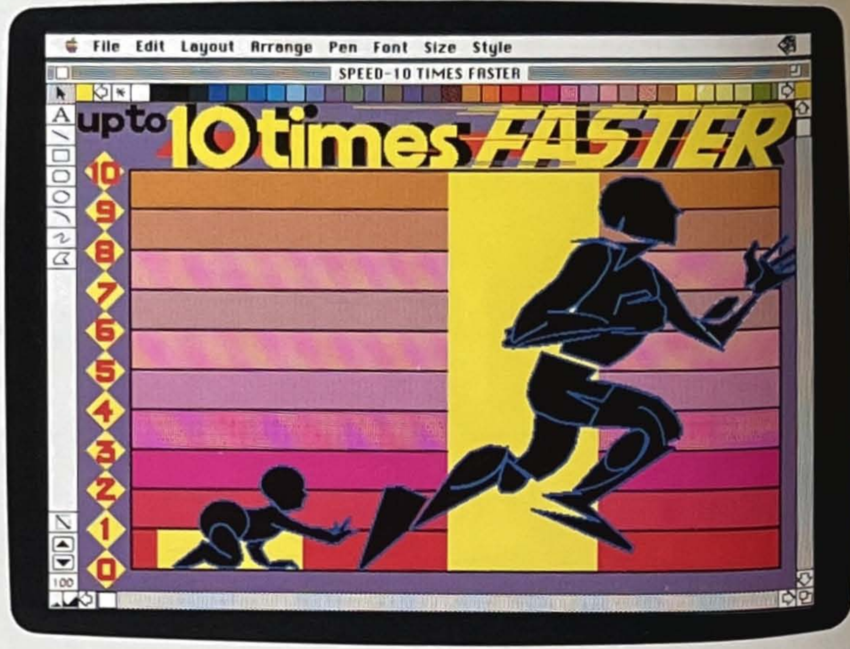

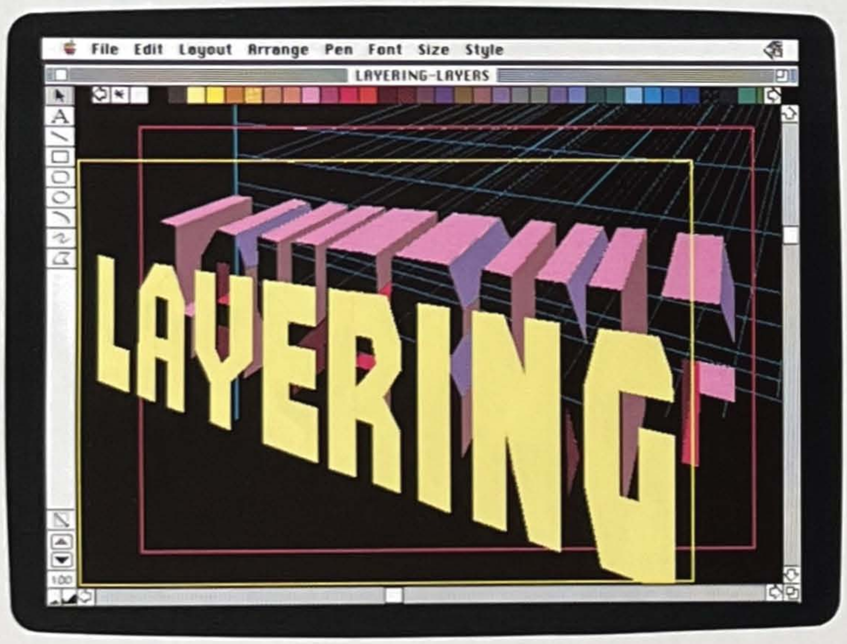

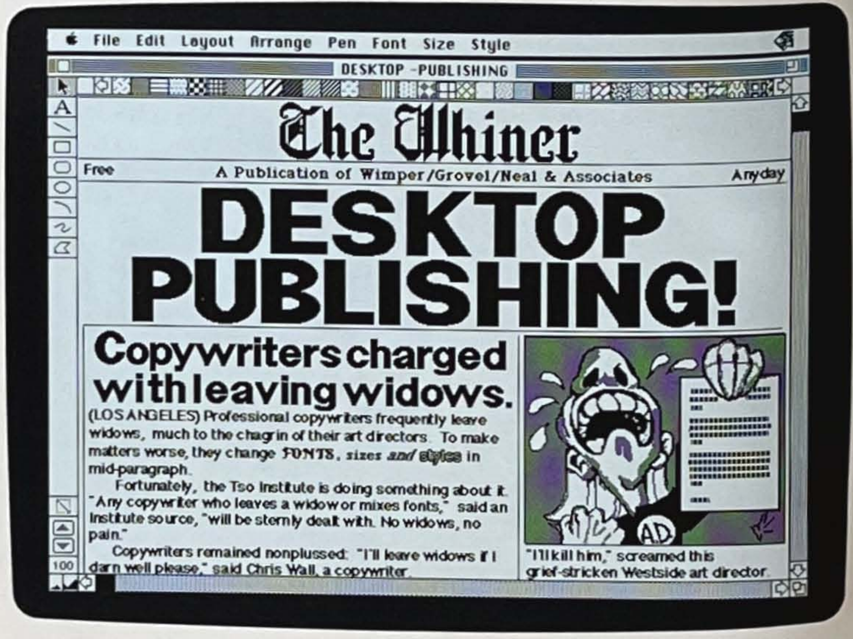

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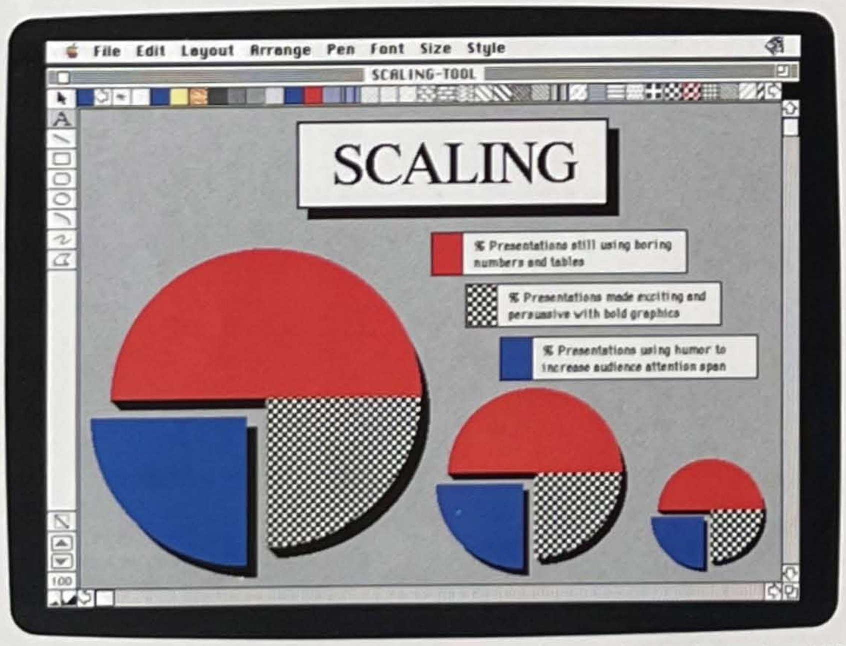

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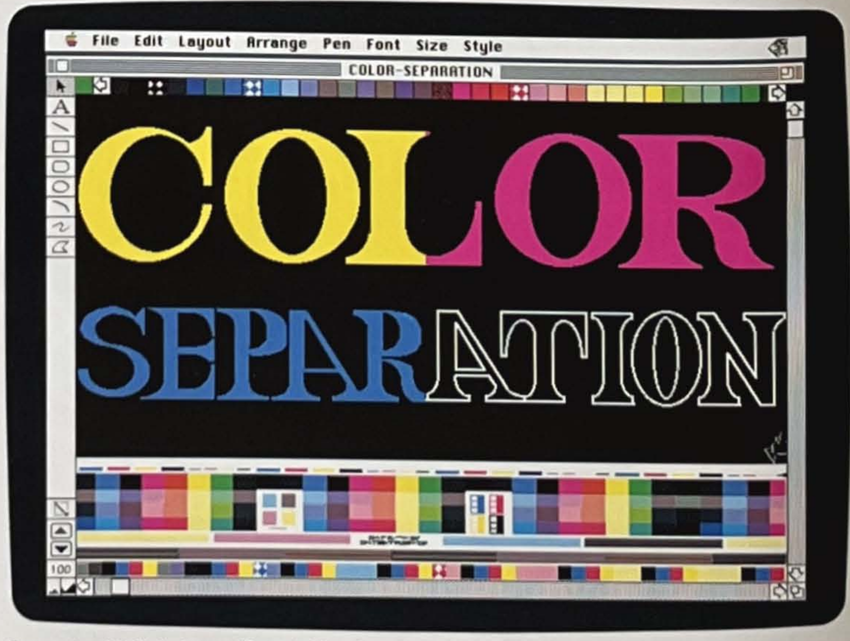

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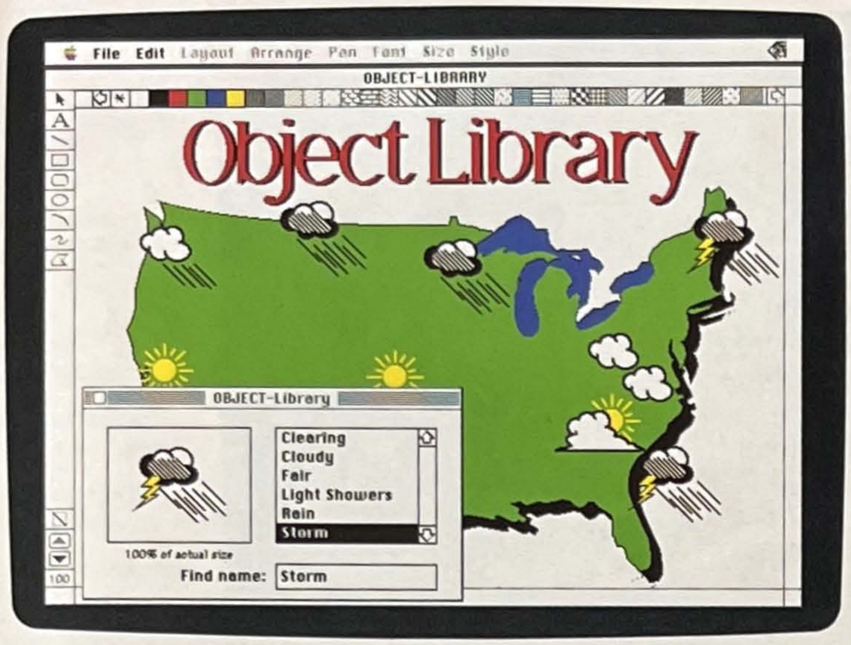

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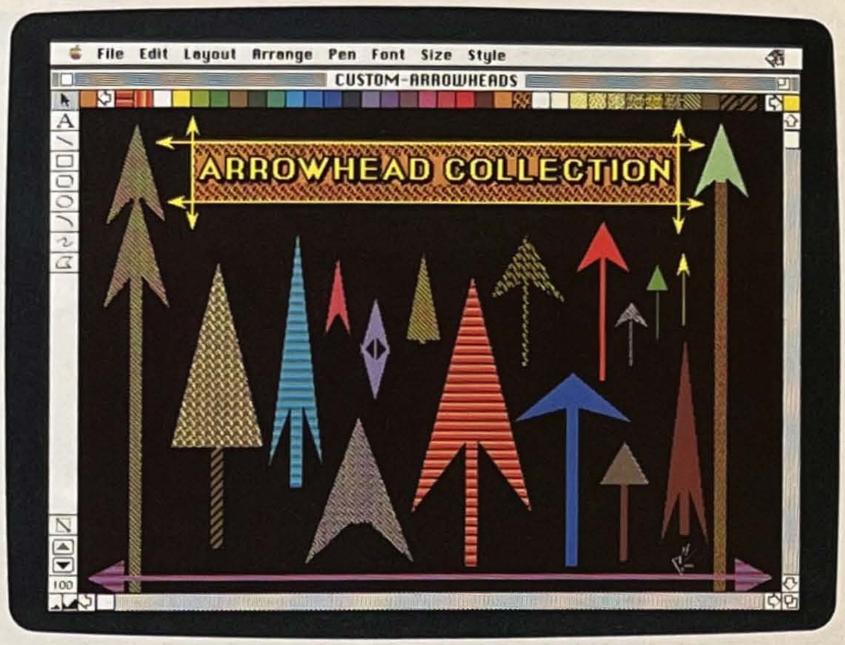

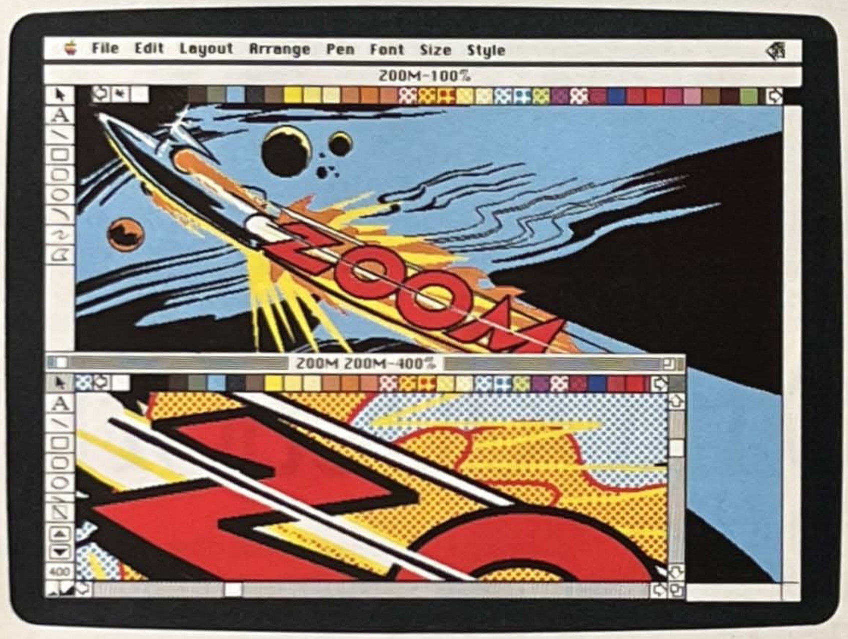

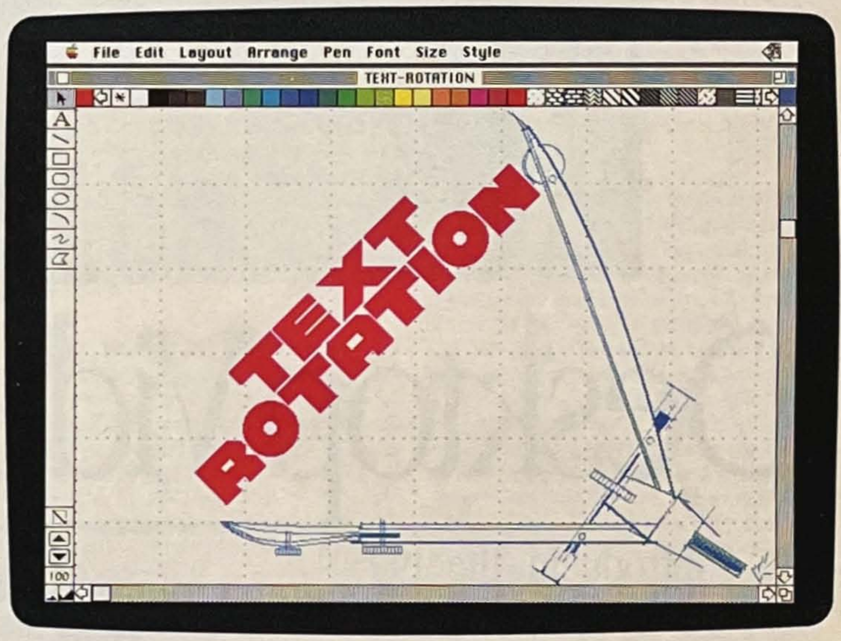

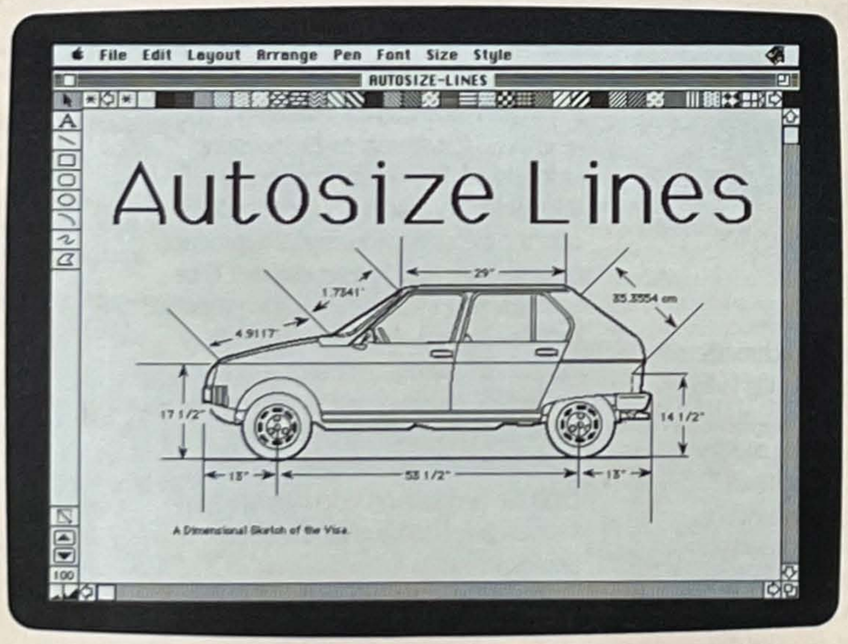

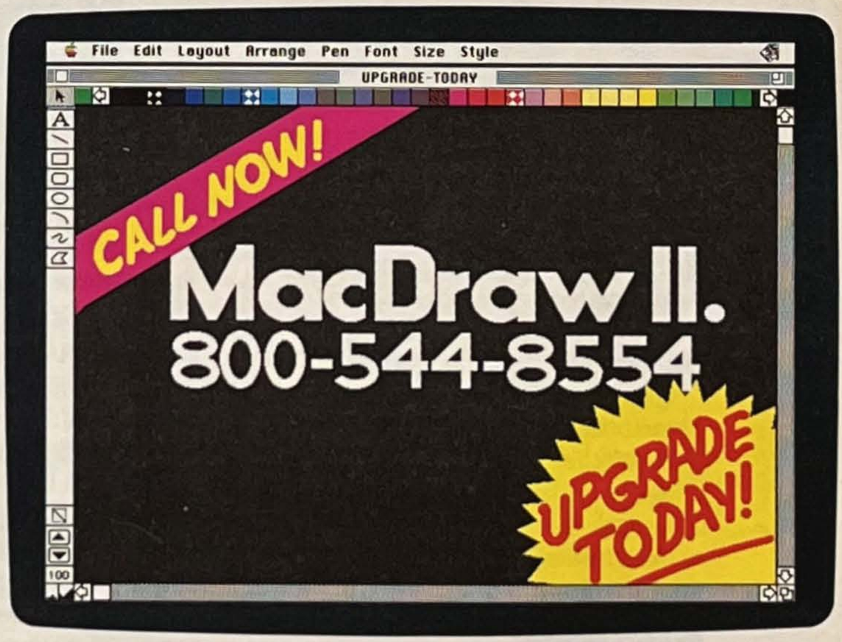

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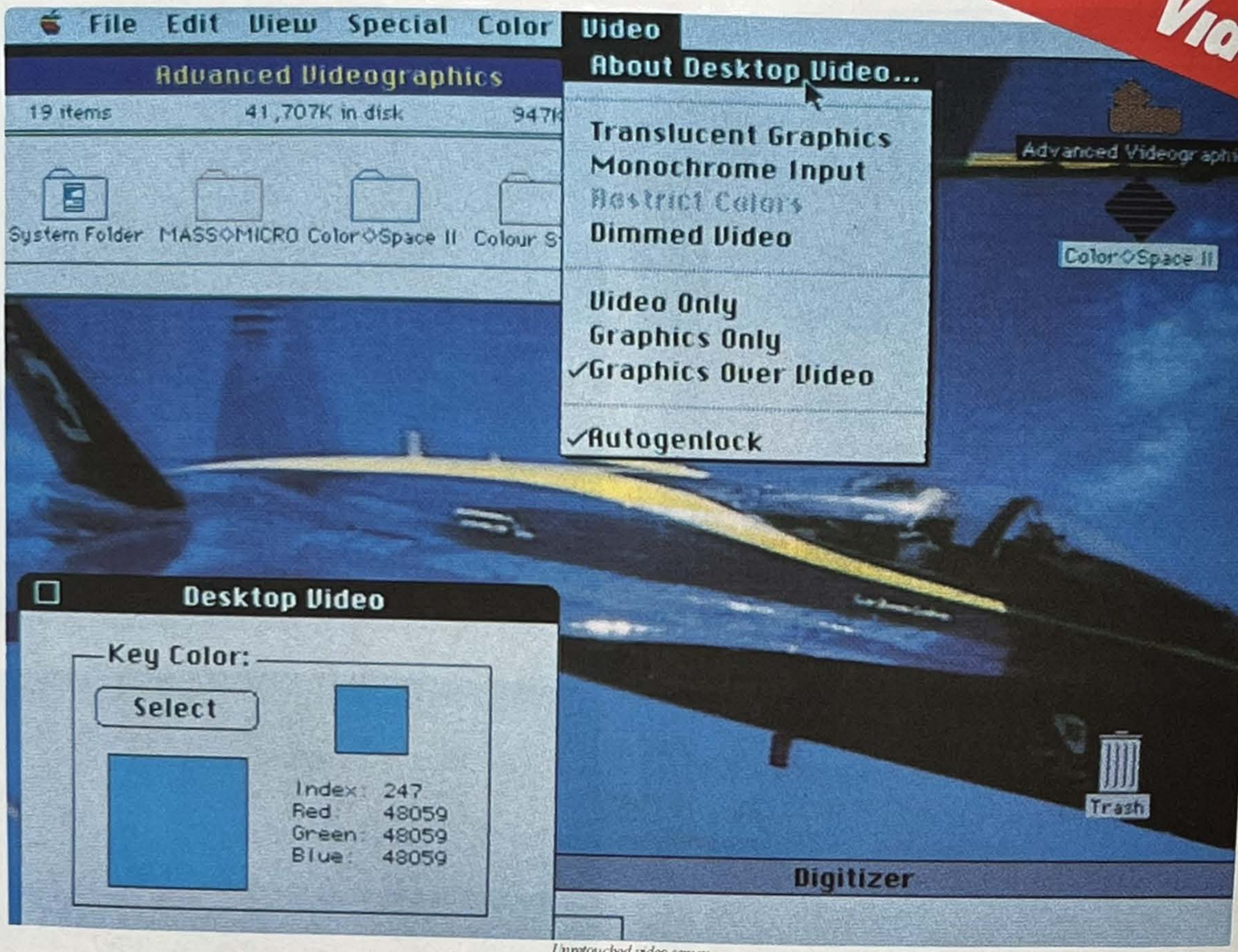

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How to use this supplement

BY ANITA MALNIG

In this October 1988 edition of MacWEEK's Graphic Arts Supplement, we address in detail many of the ideas our premiere supplement introduced in May. We look closely at the needs of the professional designer, production manager and artist, and those of their clients. Even though a business person can do production on the desktop, in many instances it's advisable to go to a design professional. Therefore, we give you hands-on information to make informed, educated decisions so you get the desired results. With the in-depth analyses of various graphic arts processes this supplement offers, we hope you gain a deeper understanding of what the Macintosh can and cannot yet do. In addition, we focus on some areas that have advanced significantly in the brief time that has elapsed since the premiere supplement was published — namely color pre-press, scanning and color printing.

The division of the book. We've broken this supplement into four main categories: step-by-steps, technology issues, design issues and profiles. These articles are intermingled but clearly marked. If you choose to read all the step-by-steps at one time, for instance, they're easy to find. Additional sections are a look forward; Product Information, which lists alphabetically by company all the products mentioned in the supplement; a glossary; and a lighthearted end paper.

STEP BY STEP. The step-by-steps take you through four creative projects and detail the processes. Each clearly delineates how, with the Macintosh, crafts people can depart from traditional methods and achieve remarkable results. Frequent MacWEEK contributor Lawrence Stevens takes us behind the scenes at Los Angeles-based Eisaman, Johns & Laws for an account of how the agency produced a finely honed slide presentation for the San Diego Zoo. The thinking behind the making of the slides is as illuminating a look at professionals at work as is the creation of the slides themselves. See Page 12. MacWEEK Senior Writer Connie Guglielmo examines a unique use of Digital Darkroom by photography expert Tom Reid of San Diego. He restores old, damaged photos (we all have a few of those) with exceptional clarity and integrity. This story begins on Page 26.

Randall Kincaid, who wrote about typography in our May supplement, writes about a portrait of one artist by another. Pioneer Mac illustrator Mick Wiggins produced our cover portrait of 20th-century industrial designer Raymond Loewy. The steps and trials Wiggins went through address the creative process, regardless of medium, as much as it addresses Wiggins' expert manipulation of his paint program of choice, PixelPaint. See Page 41.

Our final step-by-step takes an in-depth look at a still-evolving, very exciting process, that of animation and video production. Video director Jamie Krutz worked with the New York-based agency Karp, Newton, Van Brunt to explain KNVB's lively animation about the possibilities of desktop video. It's not easy to do Mac animation, nor is it easy to "show" animation on the printed page. But KNVB did the animation and we show you how, starting on Page 84.

TECHNOLOGY ISSUES. As we stepped back and looked at the swirl of emerging technology in graphic arts, we decided there were several prime topics on which to concentrate. Color is one: color separations, color printing, 24-bit color. "Color pre-press on the desktop," Page 46, by publishing consultant Robert Virkus examines this topic for which there is tremendous interest among art directors and production managers. Virkus explores the impressive range of what the Mac, with links to high-end systems, can produce.

Veteran Mac writer David Biedny covers two vital areas: scanning and color printing. What is the state of this important input process, both on the gray-scale and color levels? "The incredible importance of scanners," begins on Page 21. And then, how does one transfer color screen images to paper? What kind of color output is available right now? See Page 72 for the color printer story. Through these two articles, we come to recognize that both scanners and color printers have the potential to become common fixtures in the design studio. On the black-and-white front, Clay Andres discusses Macintosh typography from a practical and aesthetic point of view. "The type explosion" begins on Page 16.

DESIGN ISSUES. Less technical but equally practical issues for the designer are examined in the Design Issues section. Stephen Hannaford, who discussed color separations in May's GA Supplement, focuses on service bureaus. There's a mini-boom in this industry, and Hannaford, beginning on Page 30, gives frank tips on how to choose a good bureau.

Andrew Goodman, on Page 68, explores ways artists are using HyperCard as a design tool and what it may offer down the road in practical and creative ways. Also in this section, author Susan Katz, on Page 78, takes us into the world of design schools; while students may not be discarding easels, oil paints and airbrushes, the Macintosh is an ever-growing part of design schools' curricula.

PROFILES. In this section, we profile a company that is bridging the gap between traditional typography and the digital variety, and a designer whose Apple images are familiar to all of us. In 1987, New York-based Pastore Depamphilis Rampone (PDR), long renowned for its fine typesetting, teamed up with Doug Evans' Computer Impressions. Jonathan Altman gives us a lively, personal account of two men whose disparate styles produce stunning output. See "PDR Computer Impressions: Old world meets new," on Page 62. The work of Clement Mok is around Macophiles daily. From the Picasso-like drawings of the early Mac promotions to logos for Connect, Farallon and Caere, Mok's work continues to interpret the computer medium with style and insight. Karen Sorensen's story begins on Page 56.

And then some. Kicking off all these articles on Page 9 is "A look forward" by microPublishing Report publisher James Cavuoto. Cavuoto gives us a look at the next step of the desktop publishing environment into which graphic arts mesh — the network environment — and what this will offer the publishing community at large.

And, on Page 102, wrapping up all the stories is "A devil's desktop publishing dictionary," by MacWEEK columnist Ezra Shapiro. Written in the Ambrose Bierce tradition, this piece reminds us not to take ourselves or the definitions of our trade too seriously.

And, in not taking ourselves entirely too seriously, let's hope we engender and hold onto a freedom of spirit that will enable us to continue to be creative, to break new ground, to share ideas. MacWEEK will continue with its desktop publishing, graphic arts, video production coverage and will look to you, our readers, for response and contributions. □

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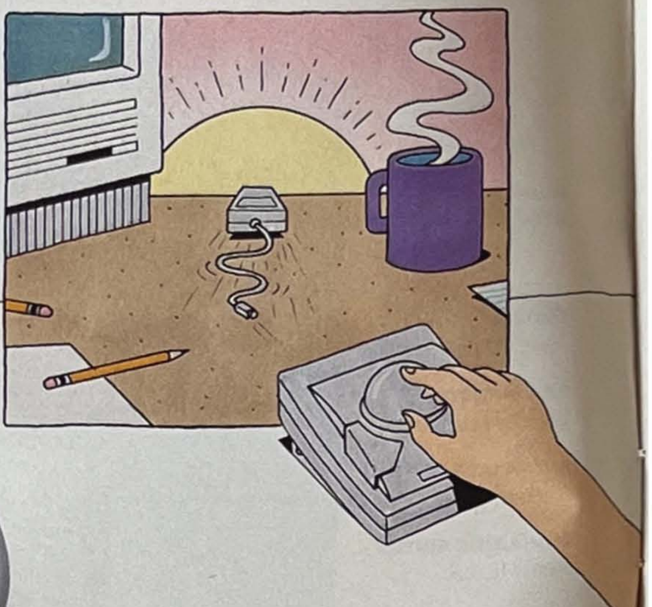

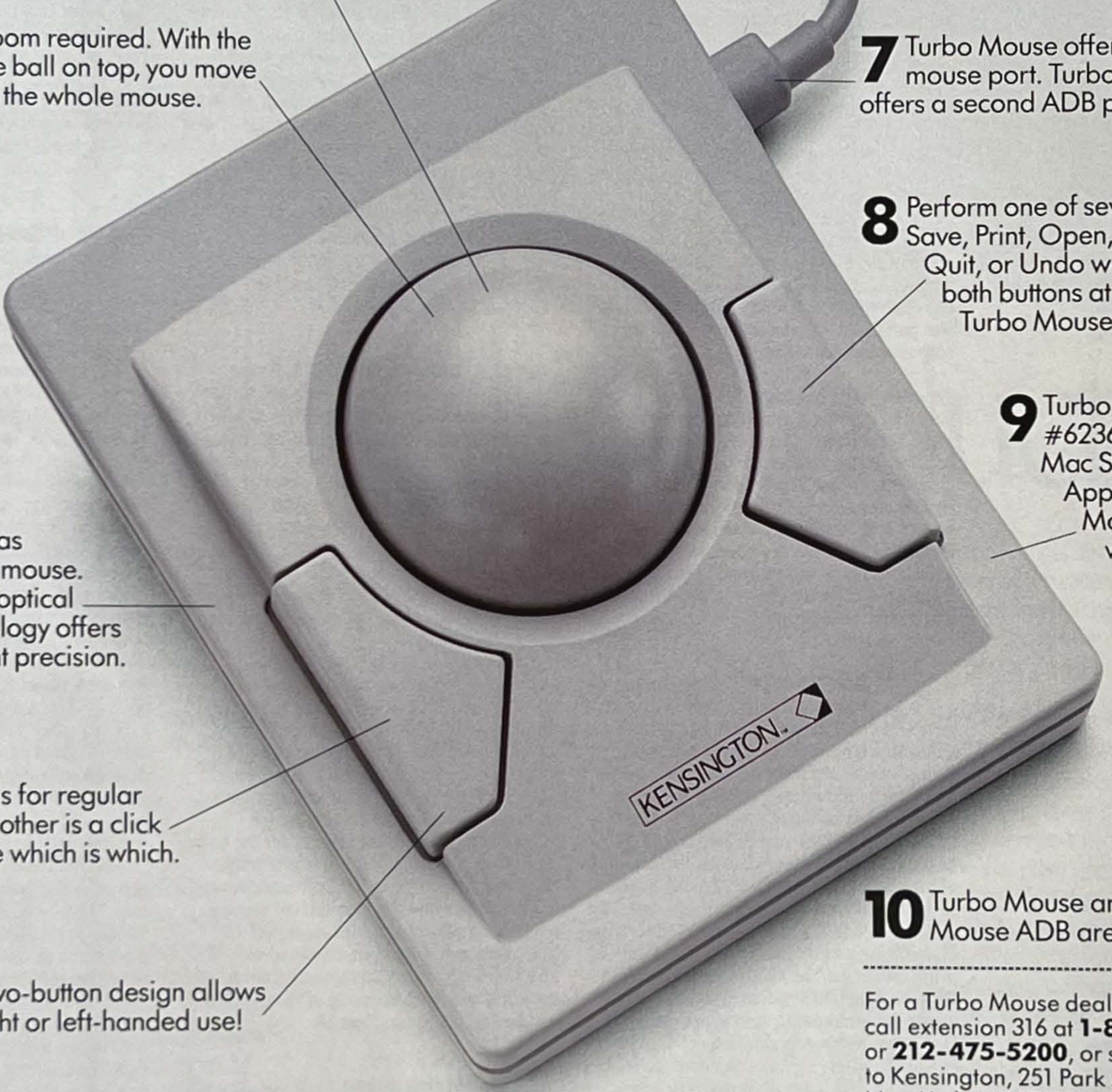

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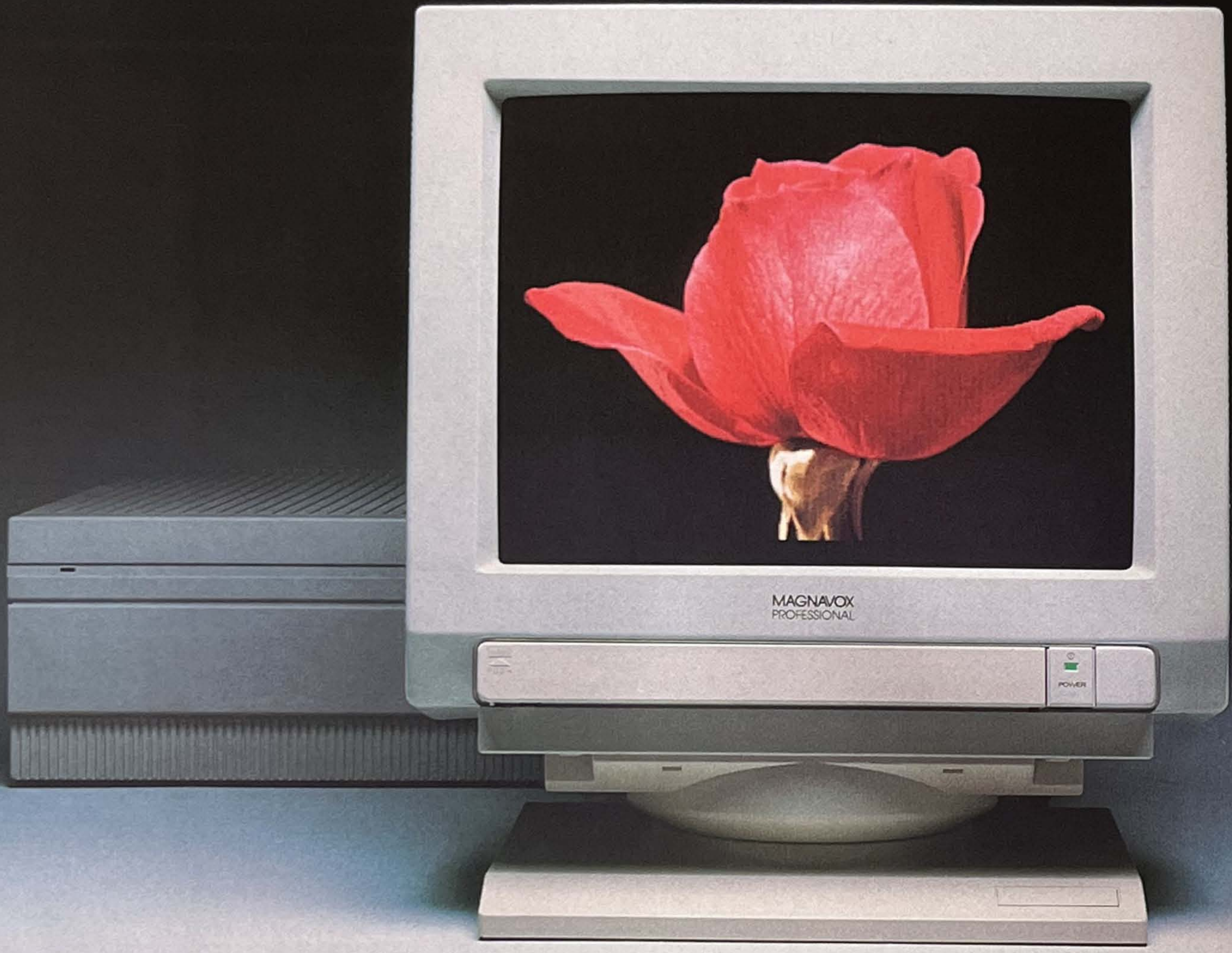

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A look forward

Desktop publishing moves to networks

BY JAMES CAVUOTO

Professional publishers and graphic artists can look forward to new enhancements and capabilities in desktop publishing systems in coming years. But one function will be particularly significant to the professional community, and that is network publishing.

This should come as no shock to professional book and periodical publishers. Publishing is by nature a group process, requiring the varied skills of writers, editors, artists and designers. But to date, desktop publishing has been largely confined to single-user applications. Two converging trends are changing this: the increasing sophistication of desktop publishing systems along with advances in local-area network software and hardware such as AppleTalk, TOPS and 3Com.

Capabilities of a publishing network. LANs in traditional computer applications allow users to perform tasks in a manner similar to the way they use a single computer. It would be tempting to assume that this is also the case with network publishing, but it isn't. As David Boucher, president of Interleaf, noted at the recent Seybold Desktop Publishing Conference in Santa Clara, Calif., "The difference between pearls and a string of pearls is just the string. But the difference between desktop publishing and network publishing is much more than just the network."

Boucher pointed out a number of functions that a work-group publishing system can offer professional users. One capability found in Interleaf software is linked copies. Each person in a work group, for example, may have a separate copy of a departmentwide document. When a user changes one of the linked copies, all linked copies in the work group are updated accordingly.

Another important network capability allows multiple users to make comments or annotations to portions of a document. The user can then view or print the document with or without associated annotations.

Boucher also introduced the concept of a "relational document manager" that tracks areas of document production in the same way that a database management system keeps track of fields and records. At any moment, the relational document manager can tell an editor which person is working on which articles or graphics, what their status is, which pieces have been approved and on whose desktops they reside. It must also be able to control access to various parts of the document for security and management reasons. Many of these features were added in the new Version 4.0 of Interleaf's TPS software for workstation environments. Most will probably migrate to the Macintosh version of Interleaf Publisher in the future.

Controlling access. One of the most serious challenges confronting work-group publishing products concerns conflict resolution or access privileges.

Database management systems in networks and time-sharing systems have had to deal with the complications inherent in giving multiple users access to the same set of data. Without some method of managing access, data can be easily destroyed or otherwise degraded. Some systems use file-locking techniques in which users are prevented from accessing a file when someone else is using it. Others bring locking down to the record level, allowing multiple access to the same file but preventing multiple access to the same record. In some cases, the first user accessing or creating a record or file may have read/write access (he or she can view and edit the data), while subsequent users have read-only access, meaning they can only view the data.

Network publishing systems must also deal with these issues, but here we are dealing with pages, chapters and publications instead of database files and records. This calls for new schemes (and a new terminology) for dealing with network publishing issues. In a study published earlier this year, microPublishing Report identified three levels of sophistication that will be found in network publishing systems. We refer to these as multilaunch, multireader and multipublisher.

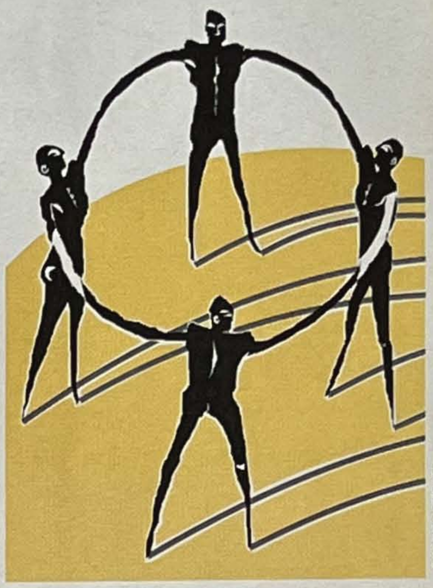
A multilaunch publishing application merely allows more than one user to launch the same copy of an application residing on a file server without extending multi-user access to documents. This offers more than the obvious advantage of reducing the amount of hard disk storage required. When you consider that a publishing program has associated with it various configuration files, defaults, hyphenation dictionaries and style sheets, you can see that a multilaunch application can afford a manager greater control and standardization.

A multireader publishing program would allow multiple users to access the same publication simultaneously, but only the first user has write access. Subsequent users may access the publication to print, annotate or view it, but they cannot change text, graphics or layout.

The most functional class of work-group publishing software is multipublisher. This type of program would allow multiple users to access a publication file simultaneously and manages the revision process to prevent conflicts. In a page-oriented, interactive program such as Aldus PageMaker or Quark XPress, this might involve page-locking to prevent a second user from making layout changes to a page that is currently undergoing revision by another publisher. In the case of a batch-pagination program such as Microsoft Word, Ashton-Tate's FullWrite or Interleaf Publisher, the program might perform file locking on the appropriate document, style sheet, graphics or publication file. For example, it would be permissible for User A to modify the style sheet while User B edits a graphic frame on Page 16 and User C begins flowing a text file in a sidebar on Page 9. Although each change, when it is made, would affect the appearance of the document, necessitating a document refresh (repagination), the three changes are independent of each other.

Factors to consider. A publisher or graphic artist assembling a work-group publishing system must consider several hardware, software and personnel issues. These include:

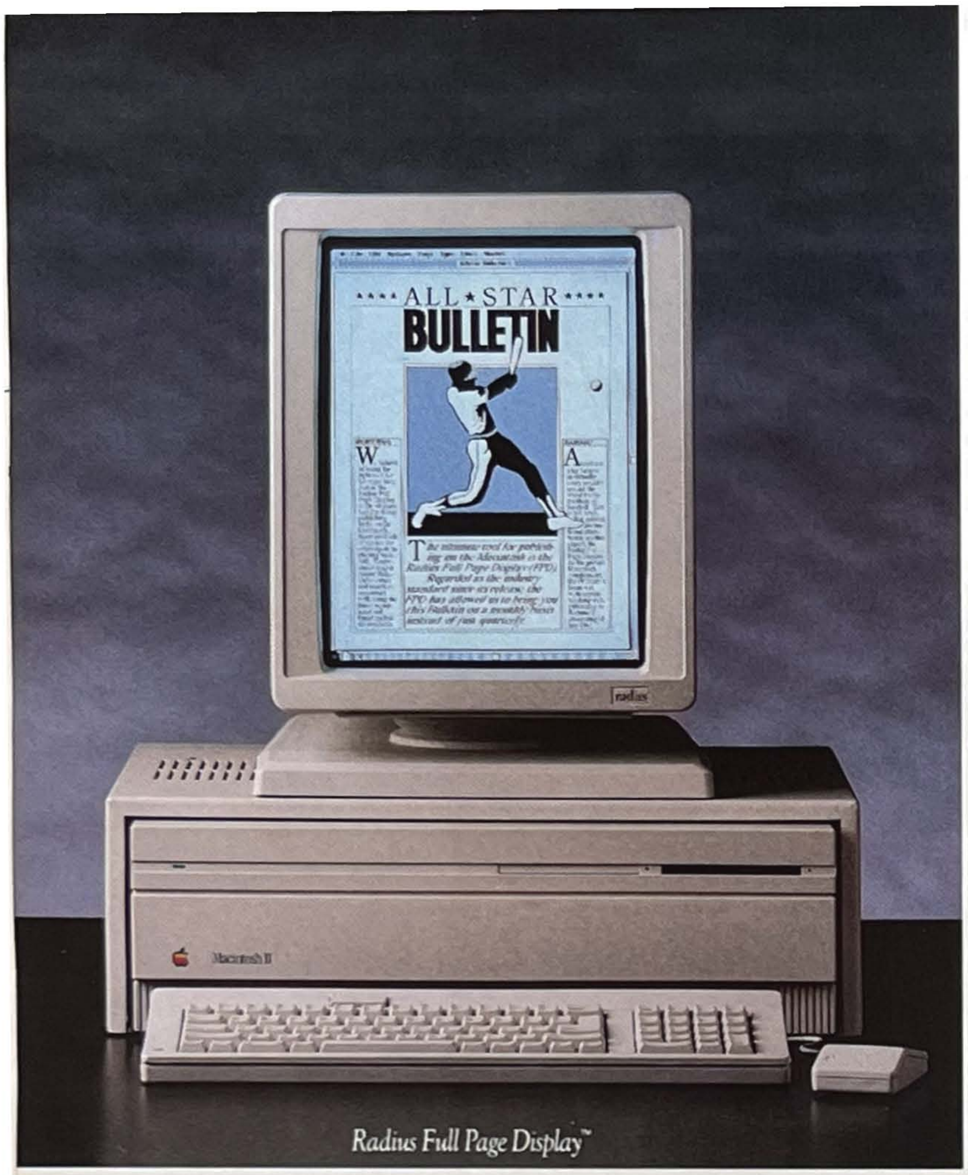
- File server: In desktop publishing, users must often work with several types of files simultaneously. These include text files from a word processor, graphics files from object- or pixel-oriented programs, scanned image files, document files from publications, and font files for screen and output devices. Accordingly, the most important factor for file service is disk capacity. One must consider the network disk storage required for the system itself plus capacities needed by each user.
- Network performance: Performance of a network publishing system will depend on a number of factors, including the bandwidth of the network hardware, access time of the file server hard disk and processor speed. In general, work groups that deal with a large number of images — particularly scanned images — will need the extra communications bandwidth provided by Ethernet as opposed to 230-Kbits-per-second LocalTalk adapters.
- Backup and archiving: As with any application, hard disk backup is a critical concern in a networked publishing system. The desktop publishing environment, however, has some peculiarities that should be considered. First, publishing users need to perform disk backup for archival and security reasons. Backup media are thus more likely to be called back into the system than typical applications. Accordingly, speed and ease of restoration become issues. A user needs the ability to restore a complete disk directory or volume within a few minutes. Second, desktop publishing users will likely want to access different portions of their archived publications, not necessarily the entire volume. For example, a design director may want to retrieve several pieces of artwork from a previous issue without calling back text or page layouts. Because of this, archival systems for desktop publishing should lend themselves to random access as opposed to sequential storage.
- Peripheral sharing: One of the major advantages of the Macintosh environment for desktop publishing is that support for laser printer-sharing via AppleTalk is built into each machine. Although it has been easy for users to share printers, other peripherals are becoming equally important and should be readily accessible to multiple publishing users on the network. Devices such as scanners, modems, fax modems and CD-ROMs do not lend themselves to network access. Versions of these peripherals that can be shared, however, are slowly becoming available.
- Work flow: Perhaps the most important work-group publishing consideration involves the interpersonal and organizational aspects of the people, not the machines, on the network. Regardless of the equipment being used, an editor or manager must carefully set up procedures for moving copy and documents among the various people in the work group. The work flow should take advantage of the abilities of a network publishing system to eliminate duplication of tasks such as page formatting, spell checking or index generation.



GORDON STUDER

Outlook. Work-group publishing will undoubtedly grow in significance in 1989, when several vendors will introduce multi-user Macintosh products. Among the companies we can expect to enter this arena next year are Aldus, Mansfield Systems, Claris, Ashton-Tate and MicroPro. At last month's Seybold Conference, Odesta introduced its Odesta Document Management System family of network applications for document management, which organize and track work performed in word processors, graphics programs, publishing programs and other applications. While we do not know exactly all the features these new work group applications will have, we can safely assume that the products will find an attentive audience among professional publishers and graphic artists.

James Cavuoto is editor and publisher of microPublishing Report, a desktop publishing industry newsletter located in Torrance, Calif. He is the co-author of the forthcoming book, "The Scanner Book" (Micro Publishing Press, November 1988).



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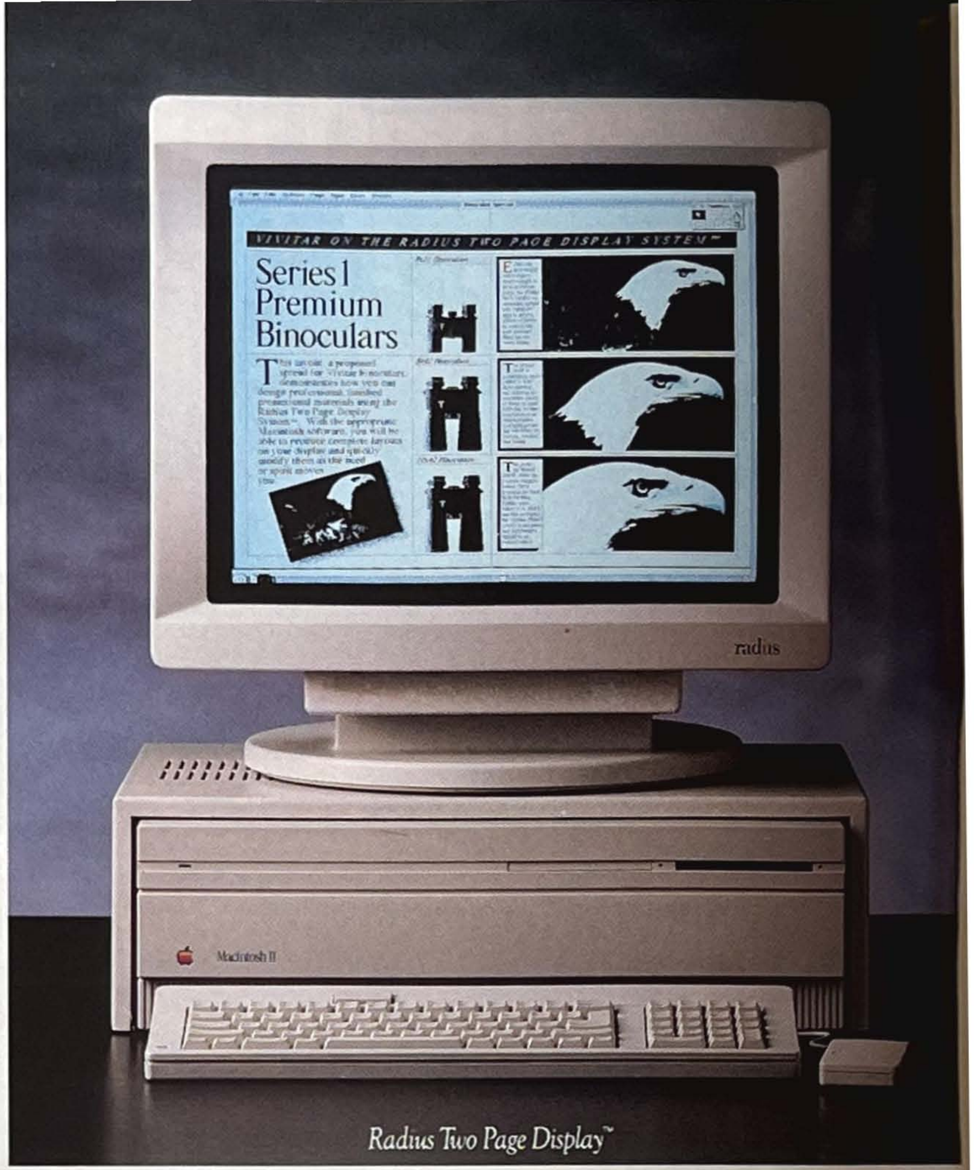

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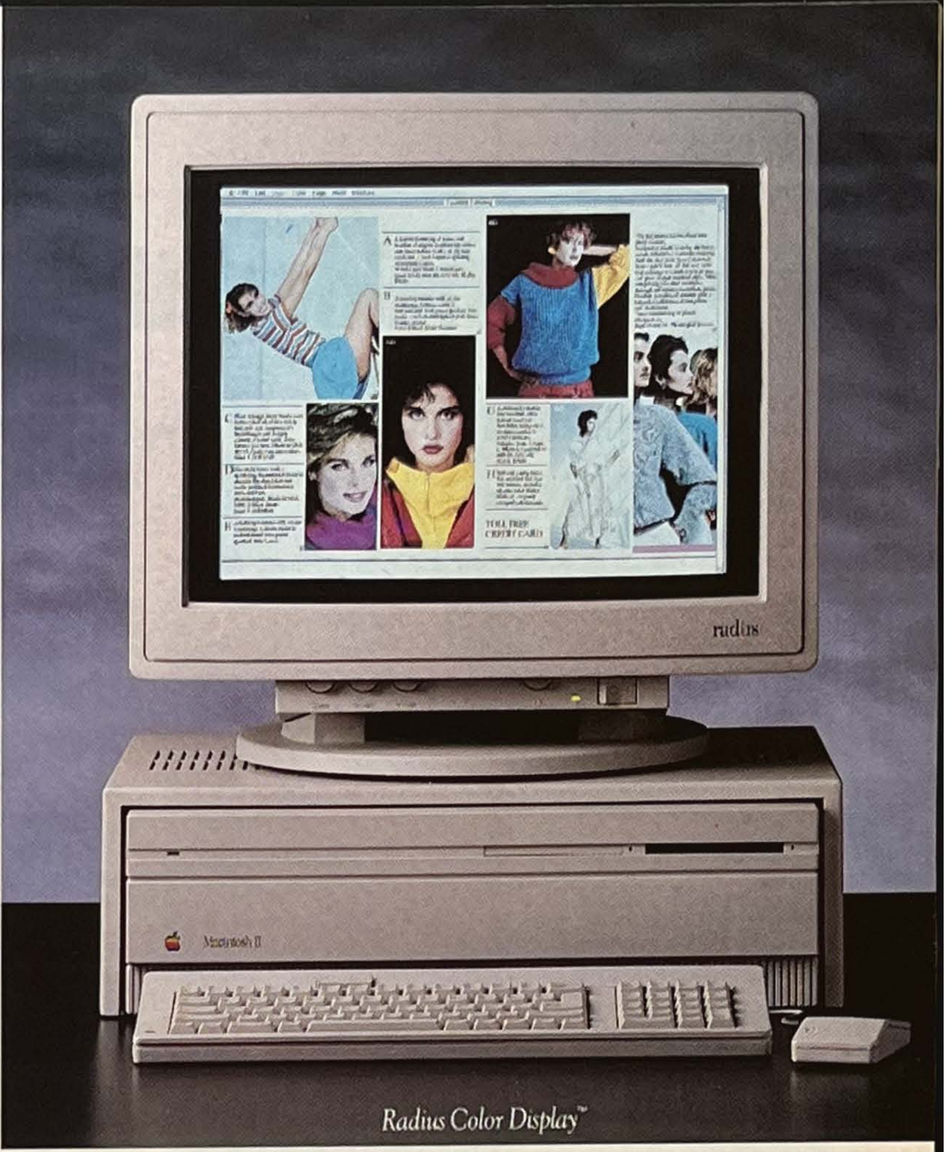

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Making the point

Creating a slide show with Cricket Presents

BY LAWRENCE STEVENS

Last spring, the Zoological Society of San Diego began an agency review to choose an advertising firm to represent its Zoo and Wild Animal Park. Among the five finalists was Eisaman, Johns and Laws Advertising Inc. (EJL), the third largest independently owned advertising agency on the West Coast. The Los Angeles-based EJL is primarily a Mac shop, running souped-up Mac IIs and SEs on a pair of AppleShare networks, with 22 Macintoshes in the creative department alone. So when Art Guerrero, the company's director of creative computing, received the task of coordinating the slide-show portion of the presentation to the Zoological Society, he turned to his Mac and Cricket Presents from Cricket Software.

JAMES ARONOVSKY

Guerrero now works on a Mac II with 5 Mbytes of memory, a Radius FPD monochrome monitor and an Apple Hi Res color monitor. But while he was working on this project, he had only 2 Mbytes of memory, which, he contends, is not enough for a full-blown color presentation. "Cricket may deny this," he said, "but I've seen enough 'out of memory' boxes during this Zoo presentation to last a lifetime." Guerrero has plans to add even more memory soon.

These are the steps that were taken by Guerrero and others at EJL to create the presentation, which, when completed, would run to over 100 slides.

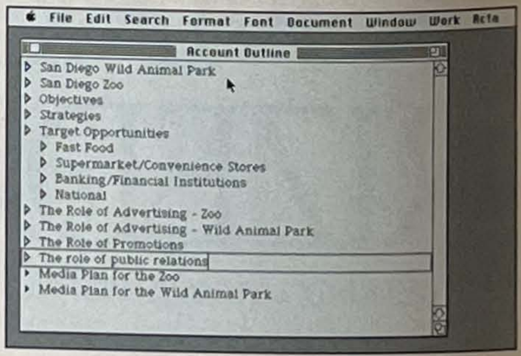
❶ Creating a presentation, especially such a massive one, is a process of moving from the general to the specific. So the first step was to decide upon broad directional guidelines. That task fell upon the company's two presidents, Dean Laws and Dennis Coe. They each sat down with Acta from Symmetry Corp., an outliner desk accessory which is bundled with Cricket Presents, and created, as Guerrero put it, "a rough and very brief tissue-paper outline of the areas that needed to be covered." That list contained such topics as media research, demographic research, description of the Zoo and of the Wild Animal Park, promotion ideas, Hispanic marketing ideas and the people who worked on the different projects (see Figure 1).

❷ Next, each topic was sent to the appropriate department heads. They expanded the ideas, breaking them down into subtopics, and jotted down seat-of-the-pants thoughts about them. For example, "Tactics" was broken down into TV and outdoor advertising and preprinted inserts. Under "outdoor" were such ideas as "primarily San Diego," "sustain with year-round paints" and "rotate bulletins, emphasizing freeway locations."

This idea generation and organization was also done on Acta. Although Acta is a desk accessory, its multiple windows and ability to save files like application files make it as powerful as many programs. But the biggest advantage of Acta to Guerrero is that, being a DA, it can be used along with presentation software and text can be copied and pasted from one to the other easily.

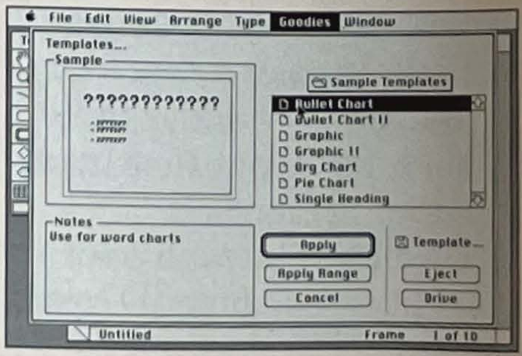
Guerrero said that the ideal way to create the plan for the presentation would have been for all the departments to work on, and complete, their outlines at about the same time. But that was impossible, since some departments, notably research, had to wait for the results of surveys and questionnaires. Some of the research included interviewing people on videotape as they entered and left the park. Typical questions were why they attended the zoo, what they like about it, how often they come, how much money they spend, what part of the country they come from and whether they came with a packaged tour. Some of these responses were later placed on slides.

❸ When all the outlines were finished, the department heads met to eliminate redundancies, inconsistencies and conflicts in the separate outlines. This took several meetings. The participants would convene, hammer out problems and scribble notes. Then they would go back to Acta, rework the outlines, meet again and repeat the process. When at last everyone was satisfied with the results, the Acta files were sent to Guerrero's folder on the network.



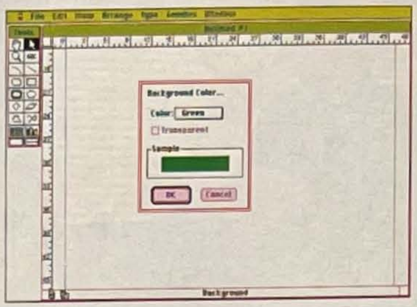
- San Diego Wild Animal Park
- San Diego Zoo
- Objectives
- Strategies
- Target Opportunities
  - Fast Food
  - Supermarket/Convenience Stores
  - Banking/Financial Institutions
  - National
- The Role of Advertising - Zoo
- The Role of Advertising - Wild Animal Park
- The Role of Promotions
- The role of public relations
- Media Plan for the Zoo
- Media Plan for the Wild Animal Park

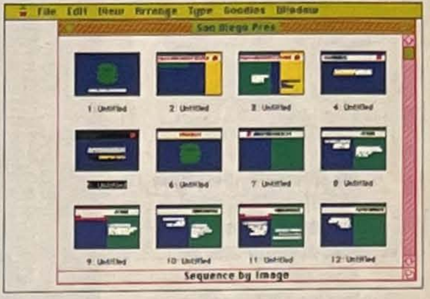
Figure 1



Use for word charts

Figure 2





Left: Figure 3
Right: Figure 4

❹ While the department heads worked on outlines, Guerrero created templates for the presentation (see Figure 2). Templates are formats for the slides. They may contain such elements as type style, size and alignment, types of bullets and borders, and color schemes. Once a template is created, text can be copied from Acta and pasted into the correct spot, and it will be automatically formatted to the text size, style alignment and color that the template specifies. Cricket Presents comes with a library of templates, but Guerrero created his own set.

❺ The Background View in Cricket Presents lets users create elements such as color, borders or a logo that will appear on every screen (see Figure 3). Guerrero chose the color elements of the templates and backgrounds "to capture the look and feel of the zoo and the park." He used dark jungle greens and deep blues to evoke the feeling of wilderness and sea, and bright reds and yellows to add a lively, circuslike flavor (see Figure 5). He also was careful to make the colors flow comfortably and pleasantly into each other. For example, in some slides he had simple white type with a blue background and a small amount of yellow color. Later in the presentation, that yellow color would become more dominant and some of the type might become red.

❻ To help create the color scheme of the slide show, Guerrero frequently used Cricket Presents' "sequence by image" feature, which displays up to 24 slides in reduced view on his Apple monitor (see Figure 4). While text is barely visible in this view, it does provide a "color story board" that helped Guerrero see how the colors and forms flowed from one slide to the other.

❼ While the presentation had to be lively, it also had to be dignified and professional-looking. Therefore, Guerrero avoided "going crazy" with color, type style and design. The entire presentation was made using the Helvetica typeface. In the entire presentation, there were about 10 general design formats, though Guerrero used fresh approaches to basic formats to avoid monotony (see Figures 6 and 6a).

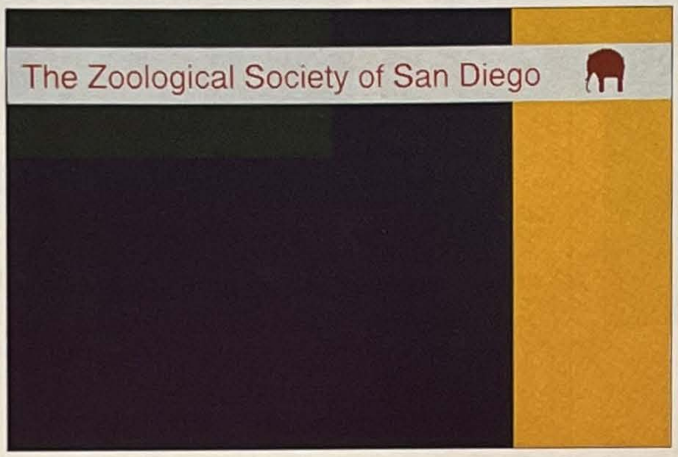
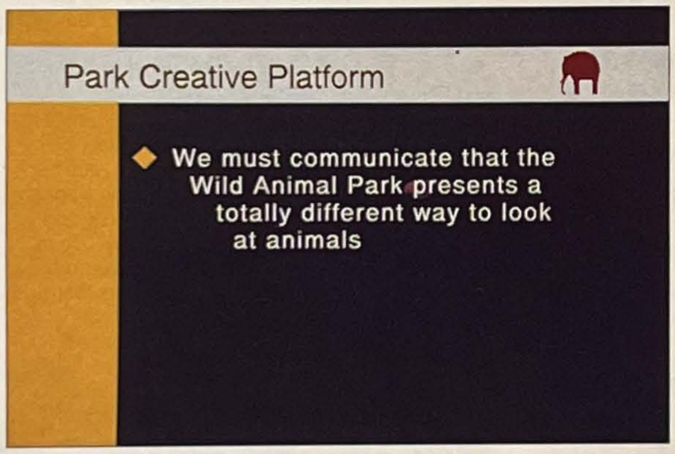
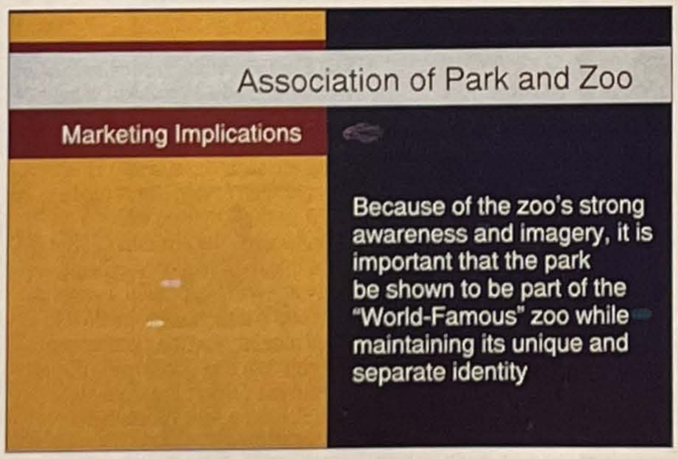

The Zoological Society of San Diego

Figure 5


Park Creative Platform

◆ We must communicate that the Wild Animal Park presents a totally different way to look at animals

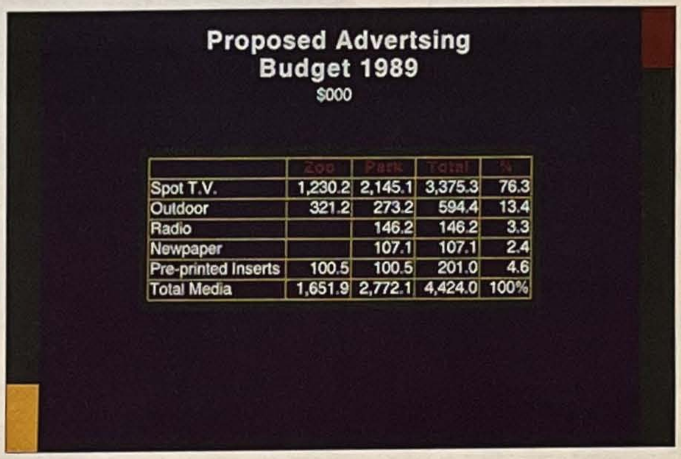
Figure 6


Association of Park and Zoo

Marketing Implications

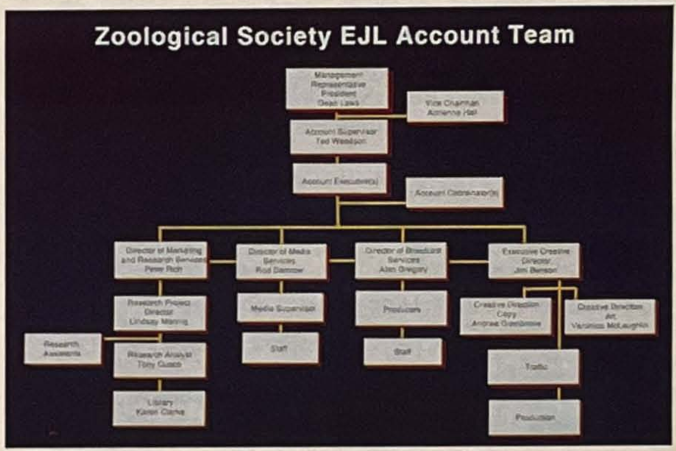
Because of the zoo's strong awareness and imagery, it is important that the park be shown to be part of the "World-Famous" zoo while maintaining its unique and separate identity

Figure 6a


Proposed Advertsing
Budget 1989
$000

	Zoo	Park	Total	%
Spot T.V.	1,230.2	2,145.1	3,375.3	76.3
Outdoor	321.2	273.2	594.4	13.4
Radio		146.2	146.2	3.3
Newpaper		107.1	107.1	2.4
Pre-printed Inserts	100.5	100.5	201.0	4.6
Total Media	1,651.9	2,772.1	4,424.0	100%

Figure 7


Zoological Society EJL Account Team

Management Representative President Dean Laws
Vice Chairman Adrienne Hall
Account Supervisor Ted Weedson
Account Executive(s)
Account Coordinator(s)
Director of Marketing and Research Services Peter Rich
Director of Media Services Rod Damrow
Director of Broadcast Services Alan Gregory
Executive Creative Director Jim Benson
Research Project Director Lindsay Manning
Media Supervisor
Producers
Creative Director Copy Andrea Gambrose
Creative Director Art Veronica McLaughlin
Research Assistants
Research Analyst Tony Guaco
Staff
Staff
Traffic
Library Karen Clarke
Production

Figure 8

❽ The next step was to paste the text from Acta to Cricket Presents. Guerrero put Acta on a Radius FPD monitor and Cricket Presents on the Apple Hi Res color monitor. Most of the time, he was able to use one of the templates he had created and saved in the Cricket Presents template library. These can be opened and applied through a special window. In occasional special cases where none of his templates would work, Guerrero tried to find a slide close to the one he had to create. He then duplicated and reworked it to fit the requirements of the new slide.

One of the toughest decisions here was determining how much information to place on each slide. Guerrero's goal was to have the main points of the presentation on the screen but still keep the slide uncluttered so that it could be easily read from a distance. Sentences were often shortened to phrases and phrases to words.

❾ Some data, such as the proposed advertising budget, was best suited for a table format. Tables are created in Cricket Presents by clicking the table tool in the place where the table should appear on the frame. Tables are made up of horizontal and vertical grid lines, column titles and table entries (see Figure 7).

❿ Guerrero used graphs to show when the money would be spent in the proposed budget. Cricket Presents does have a limited graph generation feature that produces graphs from data that is input. But Guerrero created his graph using Cricket Presents' drawing tools, which are somewhat similar to, but more limited than, Cricket Draw's. The budget graph is actually a calendar with dates along the top and spending categories along the side. The other major drawing in the presentation was the tree chart of the EJL personnel who worked on the account (see Figure 8). This showed the

Continued on next page

Art Guerrero, pictured at left, with Cricket Presents on the Apple RGB monitor and an Acta outline on the Radius FDP monitor. At right, EJL officials review and refine slide information in Cricket Presents.

MICHAEL GRECCO

Continued from previous page

teams and individuals and the tasks they were assigned.

Once Guerrero finished creating the slides, he showed them to the team of department heads via Cricket Presents' slide show feature on a SuperMac 19" screen. Like all Mac presentation-software packages, Cricket Presents' slide show mode allows you to see slides displayed on the screen with the menu bar and the tool palette absent. The slides flip each time the mouse button is pushed or automatically every preset number of seconds. Like the task of creating the outline, this was also a process of meeting, refining, meeting again and refining again. Some slides were eliminated, added, changed and moved from one section to another. Of all these, moving slides was the most difficult, since it could require a complete redesign job. For example, if a slide from a section that has a green vertical band was moved to a section that has a yellow horizontal line, the entire design had to be changed.

At some point near the end of the process, a proofreader carefully checked the slides for spelling errors, design flaws or other mistakes. But even after that, changes were being made up to three days before the presentation.

⑪ For in-house presentations, Guerrero used a Mitsubishi video monitor to display slides (actually frames) directly from his Mac II using the slide show mode. This is cheaper than having slides made and it let the EJL team make changes up to the last minute. But since this presentation was being made at a remote location, carrying and setting up a Mac II attached to a video monitor was too cumbersome. So Guerrero had slides made directly from his Cricket Presents files. The files were sent via modem to Autographix Inc., a company that produces 35mm slides, color transparencies and color Cibachrome prints. The Autographix driver that comes with Cricket Presents "prints" an image to a disk, and AGXit, which is also supplied with the package, is a communications program that supports Autographix.

⑫ While Guerrero was creating slides, speakers were using the same Acta outline to create the script they would give with the slide show. Like all presentation software packages, Cricket Presents provides note pages for speakers. These include a reduced drawing of the slide along with notes.

⑬ All the attendees were given laser-printed, black-and-white paper versions of the slides in a hard-bound thesis-type book. Cricket Presents provides a handout page that can include two, three, four or six frames per handout. But Guerrero decided to create a richer-looking handout with one frame per page. To do this he saved a copy of the presentation which he named "laser print." This was the same as the Autographix copy except that some of the frames were modified to show up better in their black-and-white incarnation.

⑭ Three days before the meeting, everything was completed. The team rehearsed the presentation a number of times, and there was some last minute fine-tuning. Twenty-five people attended the two-and-a-half-hour meeting. It included a number of speakers, videotapes of interviews of zoo visitors and even a complete zoo commercial. The slide show, according to Guerrero, provided the unifying force for the presentation. He said, "Sometimes a speaker was making a presentation, sometimes a video was playing, but there were always slides on the screen. The slides held things together and helped create a smooth transition from one part of the presentation to another."

⑮ After the presentation, the wait for the decision began.

Shortly after this article was written, the Zoological Society awarded the account to a San Diego agency. According to Guerrero, "Big agencies usually get one out of ten accounts. Cricket Presents enabled us to do a presentation quickly, respond to a variety of changing information, and do so economically." □

Lawrence Stevens, a frequent MacWEEK contributor, wrote the July 26 Window On Desktop Presentations.

Choices grow for presentation software

While MacPaint and MacDraw have been used from their introduction to create slides, flip charts and transparencies, a new breed of software designed specifically to create presentations has developed over the last three years.

The first such program was MORE from Symantec, which automatically creates bullet charts from outlines. Within the last two years, at least three other products have joined the pack: Letraset USA's StandOut! (formerly ReadySetShow), PowerPoint from Microsoft, and most recently, Cricket Presents.

All of the programs perform basically the same functions. They aid in the creation of a frame, the screen that becomes a slide, transparency or flip chart page, by providing page-layout capability as well as graphics for bullets, borders and other design elements. A frame is built just as a page would be in a page-layout program. You first create or import text and graphics. Once on the frame, the design elements can be resized and moved; font type, style and size can be altered.

While all of that can be, and often is, accomplished with a page-layout program, presentation software adds functions specifically meant to make the creation of presentations easier. For example, they allow you to display the frames by the sequence in which you expect to show them. This makes arranging and sorting easier. And they allow you to save templates that contain frequently used formats, and backgrounds that contain elements, such as a logo or color, that will appear in every frame.

Desktop presentation programs also help you to create speakers' note pages, that include a reduced image of the frame and added text, and handouts, which can contain up to eight frames per page in reduced form.

But probably the most unique feature of presentation software is the "slide show" mode. This allows you to use the Mac screen as a display device and have each frame shown for a predetermined period of time. In this mode, a display device larger than an SE screen is typically used. Occasionally, presenters use a large-screen Mac monitor from companies such as SuperMac Technologies or Radius. More often, a larger display is needed. One choice is to use a video output card and attach the Mac to a video monitor. An alternative is to project the Mac screen display with an overhead projector and an LCD projection screen such as PC Viewer from InFocus Systems and MacViewFrame from nView Corp.

For users who prefer slides, there are a number of companies that can make slides from Mac files. — By Lawrence Stevens

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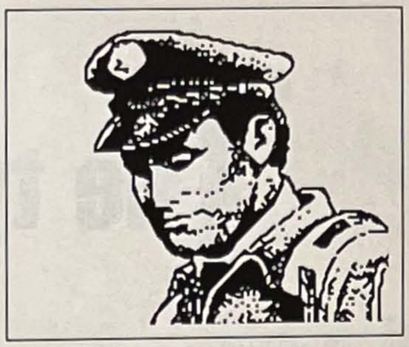

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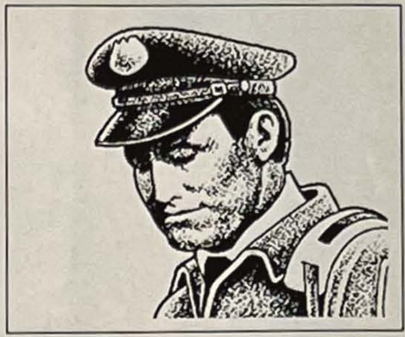

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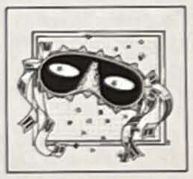

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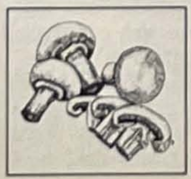

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The type explosion

Fonts and faces for the Mac

BY CLAY ANDRES

A typeface's weight refers to the actual thickness of the character stems. The thicker the stems, the heavier the weight and the blacker the overall effect of the type.

Why are there so many typefaces? Sumner Stone, director of typography at Adobe Systems Inc. and the designer of the Stone family of typefaces, gave us his matter-of-fact reply in the July issue of Fine Print magazine. "Typefaces are both functional and aesthetic objects, and the invention of new variations may be motivated by either need or beauty, or some combination of the two."

A broad range of popular typeface families is available for the Macintosh, and it is the stated goal of several large digital type foundries to convert their entire libraries for use with the Mac. You may be satisfied with the 35 fonts available in Apple's LaserWriters, but for more variety or flexibility in font selection, there are some things you need to know as you look at your options.

Typefaces and fonts. When you buy fonts, they usually come in a package containing several versions of the same typeface family. A typeface like Bodoni is available from Adobe in a package containing five fonts: Bodoni, Bodoni italic, Bodoni bold, Bodoni bold italic and Bodoni poster.

There are two kinds of fonts for the Macintosh: bit mapped and PostScript. Every Macintosh system comes with a set of bit-mapped fonts, including such standard fonts as Geneva, Chicago and New York, installed in it. On a dot-matrix printer, these same bit maps are output to the page. On most laser printers, however, PostScript fonts are automatically substituted for the bit maps upon output. Every LaserWriter II NT and NTX, for example, comes with a set of PostScript fonts installed in ROM.

The LaserWriter is sold by Apple, but the PostScript interpreter and built-in fonts are licensed from Adobe. Adobe, in turn, licenses the typeface designs from Linotype Co. and the International Typeface Company (ITC). Any manufacturer who wants to build a Macintosh-compatible PostScript printer can sign a licensing agreement with Adobe or with one of several new companies designing PostScript-compatible interpreters.

Bit-mapped fonts. QuickDraw, the Mac's internal graphics language, manipulates bit maps. When you display or print a screen image or page, the collection of dots that form what you see is called a bit map.

Bit-mapped fonts are created by a matrix of dots. The Mac's screen resolution of 72 dots per inch (dpi), which matches the point measurements of fonts (approximately 72 points per inch), lets you display a 10-point font using a 10-by-10 matrix. The bit-mapped font will print as it appears on the screen on an ImageWriter or printer that supports QuickDraw.

Bit maps do not scale without distortion, so each font size must be separately constructed and installed in your system file to give the best results. When you select "best" quality on the ImageWriter II, for example, it "grabs" the font twice its size (if available) and prints it at 144 dpi (double density), while the ImageWriter LQ prints it at 216 dpi (triple density). That is, if you set your text in a 12-point font, the ImageWriter II will compress a 24-point font, the ImageWriter LQ will compress a 36-point font, and the LaserWriter SC will compress a 48-point font. If the two-, three- or four-times font sizes aren't in the system, the printout will be a scaled bit map and will look jagged.

Many companies sell bit-mapped fonts and many more shareware fonts are available through users groups and bulletin boards. Bitstream Inc. sells what it calls SoftFonts, high-resolution bit-mapped versions of the standard 35 PostScript fonts that are output by the LaserWriter. They are designed to match the widths of the PostScript fonts from Adobe so that you can use an ImageWriter as a proofing device for a LaserWriter, Linotronic imagesetter or other PostScript printer.

PostScript fonts. PostScript is a page-description language written by Adobe Systems and licensed by Apple. PostScript fonts, the fonts output by many laser printers, consist of a programmed sequence of line paths and fills or simply outlines.

The Mac does not understand PostScript directly; only laser printers do. PostScript fonts are sold with matching bit-mapped fonts that Adobe calls "screen fonts," and both need to be installed. What you see on the screen are bit maps, but what you get on the printer are the scaled PostScript characters. They can be scaled to any size and output at any resolution. In other words, a single typeface description (the outlines) can be used to print that face in any size (the current Mac limitation is from 2 to 127 points) on any PostScript output device, from Apple's LaserWriter NT at 300 dpi to Linotype's Linotronic 300 at 2,540 dpi.

Downloading fonts. PostScript fonts are either built into the printer's ROM, or additional ones may be purchased separately. These fonts can be stored on a hard disk and downloaded to the printer's RAM when needed.

When you print a document, the Mac looks for the PostScript equivalent of the screen font that you are using in a number of places: first in the printer's ROM, RAM or hard disk (if it's an NTX, which has a SCSI interface for an external disk drive), and finally in your system folder on the Mac.

A downloading utility like Adobe's Font Downloader (or one provided by other font suppliers) copied to your system folder will send the PostScript descriptions from your Mac to the printer's RAM on the fly, or you can manually download fonts before you print a document. If you manually download a font, that font will remain in the printer's RAM and won't be overwritten until you turn off or reinitialize the printer.

If you try to print on the LaserWriter a font for which no PostScript description is found, the Macintosh system will either substitute a similar PostScript font (for example Helvetica for Geneva) or create a bit-mapped equivalent that will look jagged.

In old versions of the Mac operating system, a document stopped printing if you used

The x-height is the height of the lowercase "x" in relation to the height of the capital letter in a given typeface.

too many fonts. PostScript font descriptions vary in size from about 25 to 50 Kbytes, so that 10 to 12 fonts could be used with the 512 Kbytes of RAM in the original LaserWriters. The current System 6.0 will continue to download fonts as needed, writing over the previous fonts in the printer's RAM unless they've been manually downloaded.

Font moving and storage. Collections of Macintosh bit-mapped fonts can be stored in special suitcase files (they show up in the Finder with a suitcase icon). You can move suitcases around like any other file, but to use the fonts, you need to access them using Apple's Font/DA Mover application or an alternative like Fontastic Plus from Altsys. They take care of copying bit-mapped fonts between suitcases, where they're stored, and the system file, where they're available to applications. However, Font/DA Mover has limitations on the number of fonts it can handle and how it identifies them (see sidebar).

A bit-mapped font can vary in size from less than 3 Kbytes to more than 70 Kbytes, with most fonts averaging 4 or 5 Kbytes. PostScript fonts are stored as regular Macintosh data files and can vary from about 25 Kbytes to 50 Kbytes. A PostScript typeface family with four fonts and supplied with six sizes of screen fonts will use between 200 and 800 Kbytes of disk space.

Network fonts. Apple designed its laser printers to be shared on an AppleTalk network, and most PostScript printing is done with computers sharing a laser printer on a network. If you are building a library of fonts to be used by several people, you will most likely want some way to share your library without having to copy megabytes of font information onto multiple hard disks.

You will need a way to share resources on the network, either with a dedicated file server like Apple's AppleShare or a distributed system like TOPS from Sun Microsystems. To get your Macintosh to look past your system folder for fonts, you can use a utility like FontShare from Olduvai, or Set Paths, a shareware product available on many bulletin boards, to change the default path the Mac follows to fetch the necessary fonts to download. For each font, you can set up a new path to a network device or even to a font folder on your hard disk.

Every Mac on the network, on the other hand, needs to have the screen fonts installed to be able to access your library. Fonts are usually licensed for use with a single printer, so if you have multiple printers, you may need to pay an additional licensing fee. Fonts from Compugraphic Corp., the world's largest supplier of electronic typesetting equipment and electronic type, are licensed for one to three printers, with special licensing available for more printers.

A document that contains downloadable fonts loses some of its portability. According to Michael Hopwood, LaserWriter product manager at Apple, "The advantage of sticking to the 35 fonts that come with the LaserWriter II is that you know that no matter which font you use, it will print out correctly anywhere in the world."

Font function vs. aesthetics. When choosing which fonts are right for you, you need to think about such things as the image you want to convey, the aesthetics of font design and current fashion. But image and aesthetics are not easily defined. Russell Brown, art director at Adobe, said, "I fell in love with lower-case 'g' in ITC Galliard. I made sure the headline of the project I was working on had a 'g' so that I could use it." To the casual reader, there is nothing special about the lower-case "g" of ITC Galliard, but for Brown, it has a flair that evoked a feeling of elegance that helped convey the whole message of his project.

Fashion is even less certain than image and aesthetics. "Garamond is a best seller because Apple uses it," said Brown." Now that it is popular with desktop publishers, the chic typographers will have to find something else." Roger Black, a leading magazine designer and member of Adobe's typographic review board, said, "Helvetica was new in the United States in the early '60s, and it seemed fresh and right. Every corporation wanted the same look and they all used it. Helvetica rapidly became boring from overuse."

Often graphic designers do want to use the newest, freshest, most modern-looking face. Charles Bigelow and Kris Holmes of Bigelow & Holmes, a California font-design house, designed the Lucida family, available in serif and sans serif with an additional set of mathematical symbols due soon from Adobe. It is the first typeface designed specifically for low-resolution laser printers.

The Lucida characters are based on the classic Roman letter forms and adjusted for maximum legibility on 300-dpi laser printers. "Lucida can withstand the vagaries of the most poorly maintained printers and still remain clear," Stone said.

Newer than Lucida is the Stone typeface family introduced by Adobe last year. It is available with serif, sans serif and informal faces in six weights. The number of fonts within the family makes it suitable for many applications, and makes it possible to mix different styles and maintain a harmonious look.

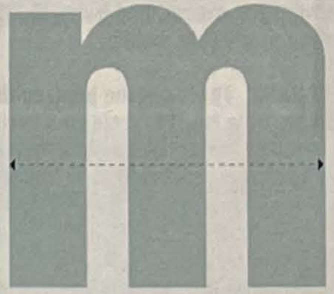
Lance Hidy, a renowned graphic artist and member of Adobe's typography advisory board, called Stone "one of the most important new typefaces since Palatino." Palatino, designed by the Swiss typographer Hermann Zapf between 1948 and 1952, was an immediate success and has remained popular for a wide range of applications. "Palatino is a real synthesis of letterforms," said Hidy. "It emphasizes the shapes of the calligrapher's pen, but is very contemporary.

"Stone, too, is traditional, yet completely of our time."

Typography is not just the selection of type, but the way in which type is used. Considerations like leading and kerning are as important to the look of your product as the selection of a typeface.

Continued on page 20

> *Typography is not just the selection of type, but the way type is used. Considerations like leading and kerning are as important to the look of your product as the selection of a typeface.*



The width of a font is measured in points and is usually referred to as the m-width — the distance from the first vertical line to the third in a lower-case "m."

a A b B c C d D e E f F g G h H

Accessing large font libraries

When Apple first created the Macintosh, it couldn't anticipate the embarrassment of riches that would one day describe the Mac font market, nor that one day its limited ID numbering scheme for addressing fonts would cause a bottleneck for professional publishers. Because new fonts are appearing all the time from companies like Adobe, Compugraphic, Bitstream and others, estimates vary — but with an average of five fonts per typeface of about 1,000 faces, there are at least 5,000 fonts available today for the Macintosh. That's a problem. ID numbers are being shared by different fonts, causing conflicts; and some renumbering utilities to get around this are leading to unexpected output, especially as users take their files to service bureaus whose font number assignments don't match their own newly assigned numbering schemes.

Font IDs are assigned to screen fonts and loaded into a user's system file according to an original scheme set up by Apple in the 64-Kbyte ROMs of the Mac 128K (a situation that persists due to Apple's decision to maintain the 128K's compatibility with later Macs). Originally, 512 unique font ID slots were allocated, although only the first 256 were reliable due to flaws in the original ROMs. Out of that remaining 256, the first 128 were reserved by Apple (and still are) for system resources or for the tool palette icons in MacDraw and MacPaint. Needless to say, the remaining 128 slots available to font developers fills up very quickly. Both ImageWriter and PostScript screen fonts require system IDs. And as Adobe's font library expands, for example, it has had to start reusing the same ID number for more than one font within its own library. The problem is compounded across developers. Users don't have to have a huge collection of fonts to have different fonts from different companies sharing the same ID assignment.

The problem doesn't stop there. Because Apple's Font DA/Mover utility has a maximum font-per-suitcase limit and lacks a way to resolve number conflicts, suitcase-management utilities such as AlSoft's Font/DA Juggler Plus and MasterJuggler, or Fifth Generation's Suitcase, have been developed. These products allow you to split your font library into multiple suitcases and to automatically reassign font ID numbers in your system when conflicts occur within a suitcase. (Manual reassignment is necessary across different suitcases.) Unfortunately, with such a limited number of slots, problems can still arise among different suitcases and renumbered fonts can cause a chain-reaction of uniquely assigned numbers. This can become a nightmare when sending files to a service bureau, unless they're willing to use your own system, suitcase manager and uniquely constructed suitcases.

CONVERTING TO THE NEW FONT NUMBERING TABLE. As an interim solution that addresses some of the original ID numbering limitations, publishers (and bureaus) with large font libraries may want to convert their library to the New Font Numbering Table (NFNT), which allows for 32,768 unique font ID numbers. It is a scheme from Apple now recognized by many Macintosh programs. It has been around since the introduction of the 128-Kbyte ROMs in 1986, and cannot be used by Macs with the original 64-Kbyte ROMs. Converting to NFNT reduces the possibility of numbering conflicts and consolidates each typeface family under the same name and ID instead of having a new ID for every font. Programs like MasterJuggler, Suitcase and Altsys' Fontastic Plus can do NFNT conversion, though Suitcase 2.0 can do it only in a random fashion that doesn't allow you to manually specify NFNT numbers. (Apple has decided to issue NFNT numbers upon request to font publishers to lessen the chance for duplication, so the ability to reassign a specific NFNT number to a typeface is important.)

While converting your font library to NFNT spreads the problem of ID assignment over a much wider range, some issues remain unresolved. Has your service bureau converted to NFNT in the same fashion? Do the programs you regularly use recognize NFNT? And how about old files whose fonts are numbered under the old ID system? Only files built from scratch under NFNT will give you what you expect, and trying to print out your documents from a friend's system will give you pretty wild results.

ADDRESSING FONTS BY NAME. There's some hope on the horizon beyond the NFNT scheme. Apple Developer Note No. 191, released earlier this year, encourages developers of applications to write their codes so fonts are recognized by their screen name instead of by numbers. Developers like Aldus, Claris and Quark have taken the lead and the following programs will retain consistency among varying font number setups: MacDraw II, Quark XPress 2.0, Ready,Set,Go! 4.5, PowerPoint 2.0, FreeHand, the next update of Standout! (formerly ReadySetShow), the next update of WordPerfect, and the soon to be released Claris CAD. Once other developers make this important change in their code, it won't matter if your New Baskerville is number 205 under the original numbering scheme while the bureau's number is 10,536 under NFNT.

Future changes to the system software, and eventually the ROMs, may allow for an unlimited number of slots beyond the 32,768 limit in the NFNT scheme. But any of the above solutions require the cooperation of those involved. If more font publishers offer NFNT fonts under Apple's guidance, more users and bureaus use NFNT utilities, and more developers use the name-addressing solution in their programs, the Mac publishing world will be an easier place to live in for all concerned parties. — By Taylor Barcroft

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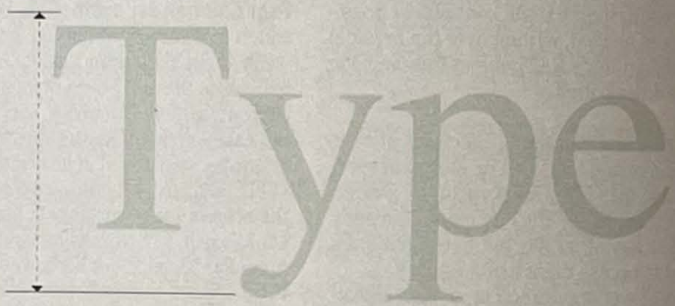
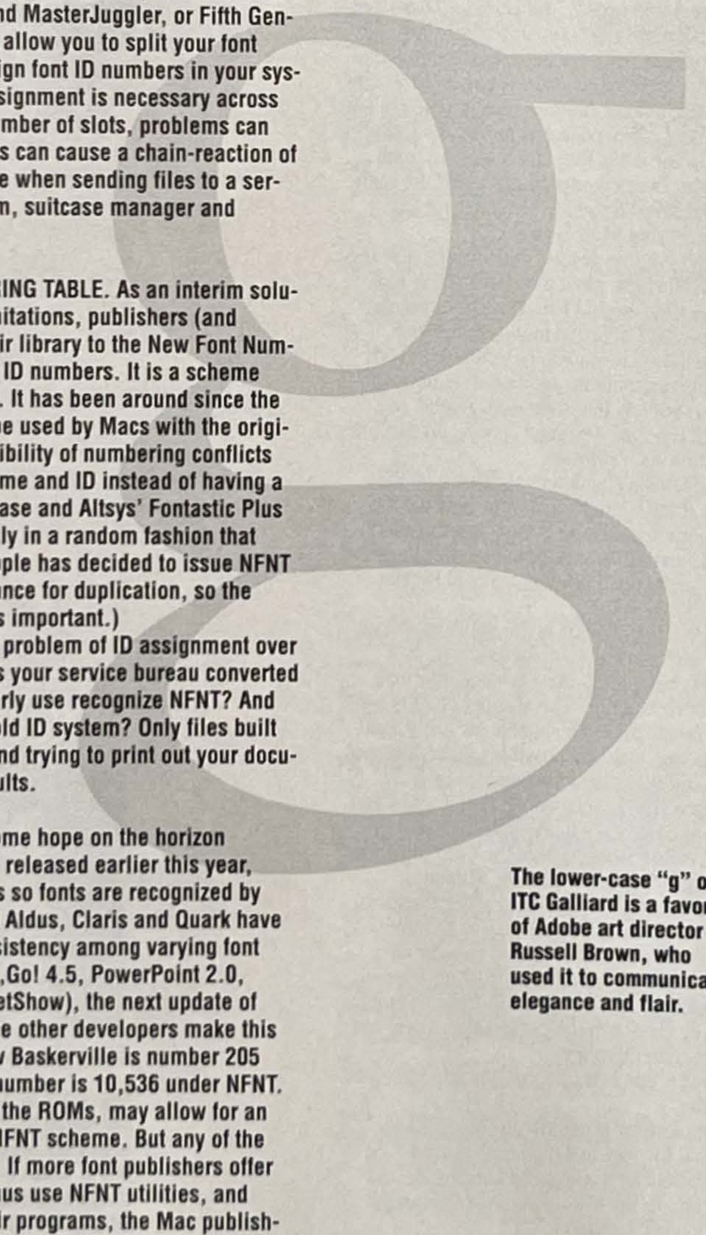
Bitstream's new Charter typestyle is designed to produce the same clarity on medium-resolution laser printers as on high-resolution typesetters.



The height of fonts is measured in points, approximately 1/72 of an inch, from the top of the capital letters to the bottom of the descenders on a lower-case letter like "y."



The lower-case "g" of ITC Galliard is a favorite of Adobe art director Russell Brown, who used it to communicate elegance and flair.

Palatino
ABCDEFGHIJKLMNOPQRSTUVWXYZ

Stone Informal
ABCDEFGHIJKLMNOPQRSTUVWXYZ

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The Stone typeface, introduced by Adobe last year, shares with the popular Palatino a traditional yet up-to-date look.

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ITC Galliard is a favorite of Adobe art director Russell Brown, who used it to communicate elegance and flair.

Palatino ABCDEF

Stone Informal ABCDEF

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The Stone typeface, introduced by Adobe last year, shares with the popular Palatino a traditional yet up-to-date look.

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Continued from page 17

"Proceed with caution," said Black. "When you find out you can get more than one font, you are tempted to use them all. I have heard of companies with font police to stem the overuse of fonts. Stick to one face and get to know it. When you need more than one, look for contrasts in color and texture like Franklin Gothic with Galliard."

You can buy Black's advice in Adobe's Publishing Pack for newsletters. You get Black's three favorite faces for newsletters (Century Old Style, ITC Franklin Gothic and ITC Galliard) with guidelines for using them. Adobe also markets packages for presentations and forms with advice from experts.

The font market. There are more than a dozen small font vendors marketing traditional as well as original typeface designs at prices considerably lower than Adobe's. For example, MacTography sells a sampler of all the PostScript fonts available for the Macintosh from all vendors.

Adobe was the first company to sell downloadable PostScript fonts, and it is working with Linotype to convert the entire Linotype library of about 3,000 fonts to PostScript format.

Kevin Wandryk, product marketing manager at Adobe, said, "We have had a near monopoly position for professional-quality type for desktop publishing." The adoption of PostScript as a printing standard and the success of desktop publishing is bringing some of the world's largest suppliers of various forms of type into the Mac font business.

Compugraphic Corp. has released the first 51 fonts in 13 packages in its cgType for the Mac library. Rather than duplicate the faces in the Adobe/Linotype library, CG has chosen fonts that complement what is available for the Mac and are already popular on CG's typesetting equipment. CG also markets a 400-dpi PostScript laser printer and a utility called cgScript that translates PostScript output from the Mac for use with CG's typesetters.

Bitstream has become a major supplier of fonts to the PC market and to manufacturers of PostScript-compatible printers. Along with SoftFonts, Bitstream announced 10 MacFontware typeface packages at the Macworld Expo in Boston this past August. "Bitstream was founded in 1981 by former employees of Linotype, with the goal of becoming the world's largest supplier of digital type," said Louise Domenitz, Bitstream's manager of public relations.

Most of Bitstream's first typefaces are already available from other sources. But Bitstream's presence in the Mac market may be more important as an OEM supplier to PostScript clone makers and printer manufacturers. Its presence is also important for compatibility with the PC font market, since Bitstream has taken pains to ensure that its font spacing is the same on a PC or a Mac.

Letraset USA, best-known for its rub-on lettering in about 700 display fonts, is becoming a major vendor of Macintosh software. Lisa Wellman, marketing director at Letraset USA, said, "We intend to be the No. 1 supplier of graphic-design software for the Mac. We are already the largest supplier of materials to the graphic arts market in the United States and one of the largest in the world."

The Letraset Electronic Type Library will convert all of their rub-on fonts, the first 40 this year, into so-called "soft fonts" for use with any program that can import files in Encapsulated PostScript format (EPS). These are not downloadable or bit-mapped fonts. They are meant to be pasted, manipulated or edited into documents and printed along with other graphic information.

Typeface democracy. Type is becoming a tool of the masses, and many Macintosh users' first experience manipulating more than one kind of type was with the LaserWriter. Bigelow & Holmes' Charles Bigelow said, "Type is no longer in the hands of an oligopoly. There are small vendors that add diversity and if type becomes cheap, it will make it like the record industry."

Mark Sulzburg, the director of graphic arts marketing at ITC said, "Desktop publishing is incredibly exciting. There are billions of potential users making all kinds of communication documents. Graphic arts is a finite base, but there is no end in sight for desktop publishing. And everyone who is discovering desktop publishing is discovering that typography is fun to use and pleasing in result."

Now that we have a choice of typefaces, the expressiveness and impact of our writing is not limited to the meaning of the words alone. The visual impact of words on paper is now as much in our control with the Macintosh as it is with the pen. □

Clay Andres is a free-lance writer and president of TERSE, a Macintosh consulting and development company in Palo Alto, Calif.

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The incredible importance of scanners

BY DAVID BIEDNY

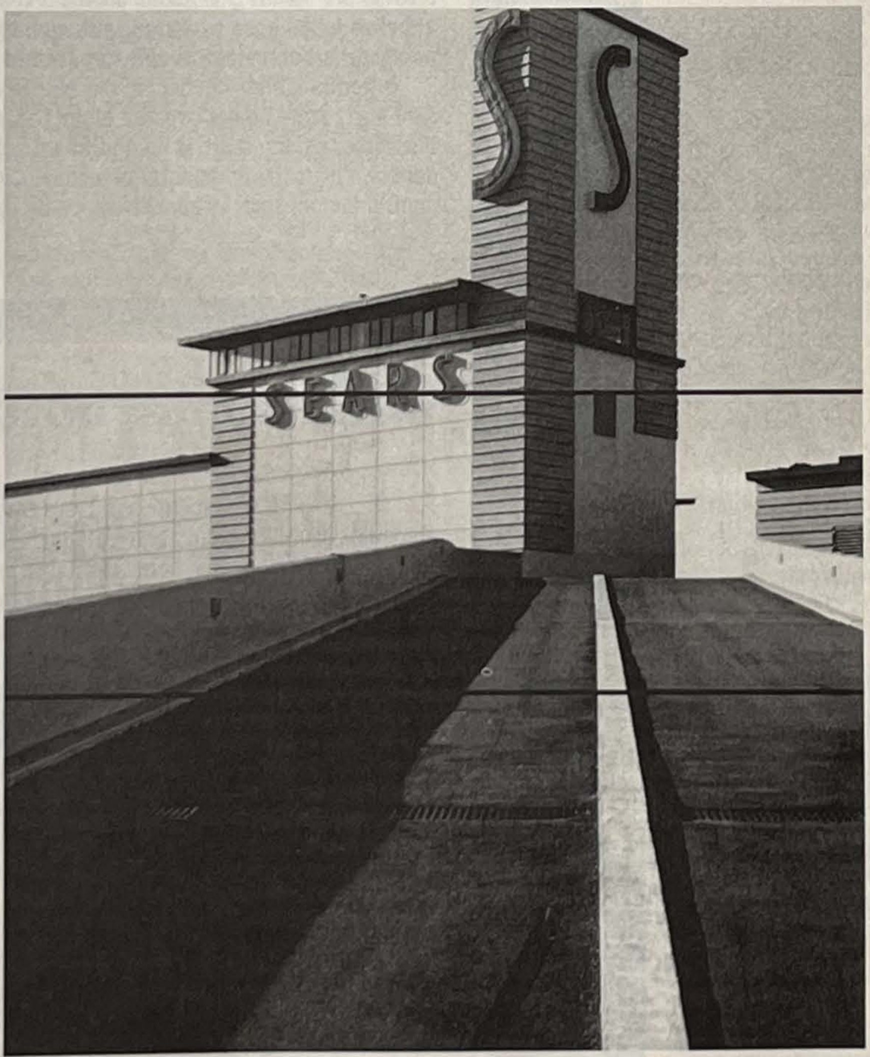
Scanners, black-and-white, gray-scale and color, are about as important to Macintosh graphic artists as layout and paint programs. Here's an overview of the different kinds of scanners and what you can expect from them.

You get out of it what you put into it" is at once an axiom for creative work, an agenda in the Macintosh production process and a hope for desktop technology. Although a good deal of talent must be applied to the desktop to yield good results, bringing text and gray-scale graphics into your Mac has never been easier, nor have the options been more varied. Even so, graphic artists, designers and publishers are still looking to the day when color output is completely under their control. But that's not to belittle the strides that have been made at the front end of things: Mac users have a wide digital net to cast as they gather up food for the feast.

Scanners (both sheet-fed and flat-bed) are the leading method of getting graphics and text into the Macintosh. A variety of scanners are on the market, but they're primarily differentiated by their ability to scan an image using either simulated gray shades (otherwise referred to as hardware dithering) or true grays. Many companies offer several models, the difference being that the cheaper models typically utilize hardware dithering, while the more expensive models can scan with true gray shades.

While more than a dozen non-color scanners for the Mac are currently available, not every scanner is suited to all applications. It's important to evaluate what kind of materials you'll be scanning. Line art (such as diagrams, line drawings and blueprints) can be successfully scanned with a cheaper, non-gray-scale scanner, but photographs benefit greatly from a scanner with true gray-scale abilities. Most scanner software allows you to scan in either line-art or photographic modes.

A hardware-dithering scanner like the MS300-A from MicroTek Labs Inc. or the AST TurboScan from AST Research Inc. analyzes the incoming image and breaks it down into clusters of black or white dots, creating varying shapes and densities to simulate shades of gray. (This technique, commonly known as halftoning, is used by the printing industry to allow a printer, which prints only at full intensity, to simulate shades of gray for printing continuous-tone images like photographs.) This kind of scanner is known as one-bit (one bit on or one bit off), since it cannot assign a non-black and white value to any dot making up an incoming image.



The image at right was scanned on Datacopy scanners at 256, 64 and 16 gray shades (top to bottom). The 256 gray-shade section was scanned on the ProScan; the 64 and 16 gray-shade sections were scanned on Datacopy's 830 model.

Gray-scale scanners can assign non-black and white values to the dots of a scanned image. Dots can be a percentage of black (50 percent black is a medium gray), allowing the scan to much more closely match the original image. The number of gray shades that a scanner can handle is usually expressed as the number of bits dedicated to describing each dot. A four-bit scanner can handle 16 true shades of gray, while an eight-bit unit delivers 256 shades. As expected, an eight-bit scan file will require much more room on disk than a four-bit version of the same file, while a hardware-dithered image will be slightly smaller than a four-bit image file. (This usually depends on the particular scanner software used to save the file.) Some of the more popular gray-scale models include the HP ScanJet from Hewlett-Packard (four bits, 16 gray shades, 300 dpi), the 730 model from Datacopy Corp. (four bits, 16 gray shades, 300 dpi), or the ProScan (eight bits, 256 gray shades, 400 dpi), also from Datacopy, and the FB-300 from Abaton Technology Corp. (four bits, 16 gray shades, 300 dpi).

When you're discussing true gray-shade image manipulation, an important point to consider is the relationship between the number of gray shades and resolution. More of one means that you can do with less of the other. (Scanners typically allow you to scan an image within a resolution range.) An image scanned at 200 dpi with 256 shades of gray will look better to the average human eye than an image scanned at 300 dpi with hardware-dithered halftones. For 300-dpi output, 16 gray shades are sufficient to accurately supply the optimum amount of gray-scale information, while at least 256 shades of gray and maximum scanning resolution are required for 1,000-dpi output or greater. For example, the images scanned by the Apple scanner — a four-bit, 16 gray-shade device — will look fine printed on a LaserWriter but will fall apart if printed on a Linotronic imagesetter from Linotype Co.

Early on in the game, another primary consideration was whether the scanner hardware interfaced to the Mac through the SCSI or through the much slower serial port. These days, most new scanners utilize the Mac's SCSI port, providing much faster speed than the serial port, regardless of the unit in question. If you're using a 512K, SCSI units won't work with your machine unless you're willing to spend extra money on a third-party SCSI upgrade as well as some extra memory. You'll need an older serial scanner or a serial interface for a newer model, like the FB300 from Abaton Technology Corp. which is available in both SCSI and non-SCSI versions. The first scanner available for the Mac, ThunderScan from ThunderWare, can also be used on older Macs as well as new ones. It offers true gray-shade scanning, has good software and is the least-expensive scanning device currently available. But it's slow and requires a good amount of user effort to end up with images that look as good as those scanned with more expensive alternatives.

Apple has finally legitimized the scanner market by introducing its own reasonably

Continued on next page

Continued from previous page

priced unit at $1,799, and even though the introduction seems like somewhat of an anticlimactic event, the fact is that because of the quality of the software provided with the unit, the Apple offering will probably energize the scanner market in general. Both AppleScan and HyperScan feature software that is superior to the software offered by most third-party vendors, which for the most part has been relatively weak, with the possible exception of Datacopy, which bundles exceptionally high-quality, powerful software with its scanners. HyperScan's ease of use and special-effects capabilities are likely to bring many people into the realm of scanning who wouldn't have been interested otherwise.

Color scanners. As advanced color applications become more popular in the Mac marketplace, it's likely that the price of color scanning technology will continue to fall. At the recent Boston Macworld Expo, Sharp Electronics Corp. introduced the JX-300, a 24-bit color, eight-bit gray-shade, 300 dpi flat-bed scanner for "under $5,000" due out in the fourth quarter. The only major differences between this unit and Sharp's higher-end $9,000 color flatbed are speed and maximum scanning size. The new unit can handle up to 8.5-by-11-inch original art, while the higher-end box goes up to 11 by 17. As expected, the cheaper unit is slower.

The two major color scanners currently available are the Sharp JX-450 and the ScanMaster from Howtek Inc. The Howtek unit is actually a repackaged Sharp JX-450 with different software. Both units can scan artwork up to 11 by 17, offer variable resolutions up to 300 dpi and produce 24-bit color image files. Both the Sharp and the Howtek connect to the Mac II through a General Purpose Interface Bus (GPIB). The software included with the Howtek (bundled with the GPIB card, which costs an additional $1,295) is serialized to work with only one scanner, which precludes using it with the Sharp unit, while the software included with the Sharp, PixelScan, works with either scanner.

Slide scanners utilize a 35mm slide as original art and scan at very high resolutions (1,200 to 2,000 dpi), resulting in high-quality images. Both Howtek and BarneyScan have announced products, although neither was officially shipping at the time of this writing. Both units generate 24-bit files, and the BarneyScan software will create full-color separations at a high enough resolution (150-line screen) for Linotronic film output.

Digitizers. Video digitizers were the first input devices to hit the Mac world years ago. While scanners have surpassed digitizers as the preferred method of input, digitizers are still quite popular for situations that specifically warrant their use, such as getting pictures of 3-D objects into the computer without having to photograph them and then scan the photos. Digitizers come in two kinds: those designed to work with standard Mac line (512, Plus and SE) and those designed specifically for the Mac II. (These usually

Digitizing tablets

Digitizing tablets, such as the Graphics Tablet from Kurta Corp., the Macintizer from GTCO, or the Bit Pad Plus from Summagraphics have found acceptance in the drafting and engineering communities, and to some extent, the computer-art field.

Most tablets use either a stylus or a puck.The stylus is a device in which pressure on the point or a touch of a button emulates pressing the mouse button. The puck looks like a mouse with a magnifying glass and has targeting crosshairs, which are typically used for precision tracing of blueprints and technical designs. With most of the tablets, the stylus moves independent of the tablet like a real pen, but is attached to the base by a cord. Although this may prove to be a hindrance for some computer artists, many people get used to it after awhile.

Different tablets connect to the Mac in different ways. Some connect through the ADB port, while others use one of the two serial ports and include different software. For some tablets, there is no additional software, while others include extra control software typically in the form of a cdev (Control Panel device) that allows the user to control factors such as sensitivity. — By David Biedny

Optical character recognition

OCR (optical character recognition) has had a hard time in the microcomputer world because of the relatively poor accuracy of most of the OCR software that has been available. Some available scanners include an OCR program as part of their standard software package: New Image Technologies and DEST Corp. include OCR programs with their scanners. But while both software packages have been optimized to work with the most common typefaces, neither program can be taught to recognize non-standard typefaces.

In the realm of "teachable" OCR software, Read-It from Olduvai Corp., is a good example. The program can be taught to read different typefaces, and a library of learned styles is available through the company. Users with medium-size OCR needs and a Mac Plus or SE may want to consider the program, but should be cautioned about the length of its "training curve." It may simply be less time-consuming (and less expensive) to type the text into your computer yourself or hire a data entry person to do so.

OmniPage from Caere Corp. may change the Macintosh OCR scene significantly. According to Caere, OmniPage can read any non-stylized type from 8 to 72 points in size and doesn't require any training. Even though the program requires a 4-Mbyte Mac II or a similarly equipped SE with a 68020 accelerator card, those with serious heavy-volume OCR needs should take a look at it. Apple and Hewlett-Packard are both endorsing OmniPage for use with their scanners. — By David Biedny

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Most of the digitizers for the Plus and SE include an input for a composite analog video source such as a video camera, videodisc player or VCR. The most popular units include Magic from New Image Technology, MacVision from Koala Technologies Corp., and the ProViz from Pixelogic Inc. All scan true gray shades, although the newest gray-shade software for the MacVision, which was finally released almost nine months after it was originally announced, leaves much to be desired. Due to the inability of the Plus and SE to display gray shades on screen, shading is represented on the Mac screen as bitmap-dithered patterns, while the images can be saved to disk in Tag Image File Format. TIFF files can be directly imported into most page-layout programs and also allow scanned images to be brought into proper editing programs like Digital Darkroom from Silicon Beach Software Inc. and ImageStudio from Letraset USA. The editing capabilities of most of the supporting scanning software included with the units are inadequate for most professional use.

AST, Computer Friends Inc., Data Translations Inc., RasterOps Corp. and TrueVision are all introducing gray-shade and color digitizing cards for the Mac II. Some of the Mac II digitizing cards have real-time frame-grabbing capabilities (one-thirtieth of a second), which allow them to display images almost instantaneously, and their own onboard RAM. The TrueVision NuVista offers either 1, 2 or 4 Mbytes of RAM, AST's NuView card has 1.5 Mbytes of RAM, the Data Translations ColorCapture has 768 Kbytes and the RasterOps TrueCapture 324 has 1.5 Mbytes. The Computer Friends ColorFREEZE 24 has no onboard RAM, but it can still capture a full 24-bit color image in one-fifth of a second. Images are typically saved in either PICT II, EPS or color TIFF format (color TIFF support was still scarce at the time of this writing).

Some other color digitizing devices for the Macintosh II include a color version of the ProViz with a SCSI interface box and the TZ-3C Truvel (there are three versions), which includes a stand-mounted lens system and moving light source with a SCSI interface, providing scans up to 900 dpi. The Proviz accepts NTSC video source signals as input, while the Truvel is meant for scanning flat art and 3-D objects. A potential problem with the Truvel systems is that they require three passes of a single image to create 24-bit color scan. This may mean slight misregistrations between subsequent scans if the subjects are moved or jarred between passes.

Storage and memory. Scanned and digitized images are disk hogs, and once you start getting down to serious business, boxes of floppies and huge chunks of hard disk space suddenly begin to bulge. A hard disk should be considered an absolute necessity (as if you haven't read this elsewhere), and tape backup devices may start to make sense. The real solution to the problem is the inevitable boom in optical write-once-read-many (WORM) storage. Even hundreds of megabytes don't seem so gargantuan when you're faced with a few dozen 24-bit color-scanned pictures. Optical media is extremely important to the success of large-scale usage of the Mac II as a true image-processing computer.

Another fact of life to come to terms with is file compression. Scanned photos can take up several megabytes of disk space. Large files can be made smaller without losing any integrity of the original data. The most important utility for scanned-image users is StuffIt, a shareware file-compression utility written by Raymond Lau, considered a standard in the world of Mac telecommunications. StuffIt can compact any application or document by 10 to 90 percent, and you can expect at least 30 percent compression of TIFF files. Although it does take time to compress and decompress the images, the program can reduce storage usage in truly meaningful quantities. (StuffIt was preceded by Packit, a similar utility with compression functions. It has virtually been replaced by StuffIt.)

And then there's the unpleasant subject of RAM; you can't have too much. If you're using a Mac Plus or SE, you'll want at least 2 Mbytes of RAM for heavy scanning and digitizing, especially if you want to use MultiFinder to move quickly between separate scanning and editing programs, and even then, memory becomes fragmented rather quickly. On the Mac II, 4 to 5 Mbytes are a given for working with eight-bit gray-shade or color images, and if you're lucky enough to be considering 24-bit options, then consider 8 Mbytes of RAM essential. That brings up an entirely different problem regarding the amount of contiguous RAM that the current Mac II can address. The best solution to the problem lies in virtual memory, which allows the image to be maintained on disk while the application thinks that the image is in RAM. This capability doesn't inherently exist in the Mac, although ImageStudio and PhotoMac both offer virtual memory techniques for managing large images in smaller amounts of RAM.

Who gets what? The question of which type of input system is best for what you want to do inevitably arises. By asking yourself some primary questions about the kind of original material that you want to get into the Mac, you can quickly come to a basic conclusion regarding which type of input system to use.

For flat art, a scanner is the preferred input device, although it's quite possible to use a digitizer mounted on a camera stand instead. The possibilities presented by the availability of different lenses for such a setup may offer advantages not as easily reproducible with a scanner, such as the use of special-effects filters, fish-eye lenses, etc. Overall, however, a scanner will produce sharper, more consistent image quality.

If you plan to use digitized or scanned images in a job that will ultimately be printed on a higher-end printer like a Linotronic, then you'll want something that can work with eight bits and 256 shades of gray. For situations where the source of the images is a video source, a real-time frame grabber for the Mac II is the preferred input device, while digitizers for the Mac Plus/SE typically have no provision for real-time previewing of an incoming image.

Mouse alternatives such as digitizing tablets (see sidebar) are good for getting complex, detailed images into the Mac, although engineers may want a puck-based tablet as a primary input source. While it would seem almost indisputable that most artists would find it easier to do freehand drawing with a tablet, this turns out to be a subjective issue. If you're considering a digitizing tablet, make sure that you have some hands-on experience (more than just five minutes) before buying.

Color is another beast entirely. While it's quite feasible to do most type of black-and-white layout and design jobs using a Macintosh, color is still an unfolding process. Getting color into the Mac is one thing, getting it out is another. While it's true that the current color-display capabilities are quite impressive, desktop color proofing via Macintosh-based color printers has a way to go yet, and the final output still eludes being fully produced with desktop technology. This will change as the Macintosh II market matures. □

David Biedny is a frequent contributor to numerous Macintosh publications.

Scanner software

While all of the software included with the scanners is primarily meant for the same function, the range of usefulness of the various packages is quite broad, with capabilities ranging from the most basic scanning controls to elaborate halftone and image-correction features. Although many of the special features are welcome, there are some basic functions that you should look for.

On the most basic level, scanner software should allow you to select the scanning area on the screen to avoid scanning a full page, if the desired image is centralized in a specific area on the page. Some of the better software allows you to "pre-scan," to scan the selected area at the lowest quality or resolution to accurately determine the actual scan area. Also desirable are brightness and contrast controls that can be set from the software (some of the scanners also have controls on the hardware itself for adjusting brightness and contrast).

Most of the scanners work at various resolutions. The software should at least support 72 dpi and an intermediate value between this and the highest resolution setting (150 dpi, for example). Much of the software also allows you to select a magnification size (which enlarges or reduces the scanned size of the image), usually specified as a percentage of the size of the original. The most advanced packages also allow you to select from various halftone screen patterns for halftone scanning.

As for editing tools, the most basic functionality would include an eraser and selection marquee. Some of the software includes a basic pencil tool for quick-and-dirty touching up. A lasso tool helps for selecting irregular areas. The marquee should allow you to select and save a specific area of a scan to disk. For more advanced retouching, look to products such as ImageStudio or Digital Darkroom (see "Image enhancement software: Its own niche, " Page 28). — By David Biedny

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Stop yawning at that dull gray desktop! ColorDesk, by Paul Mercer, is a cdev that personalizes your screen by displaying a background picture (any PICT file, color or black-and-white) of your choice in place of the usual gray desktop pattern. (At least 2 MB of memory recommended for ColorDesk).

Dimmer

This great utility by Chris Derossi "dims" your screen while you're not using it, to prevent burn-in. Other "screen saver" utilities erase the screen, but Dimmer simply darkens the screen. Specify the time delay before dimming (1 - 120 min), and the dimming level (0% - 100%). Dimmer supports multiple monitors.

Switch-A-Roo

Bill Steinberg's handy FKEY quickly switches between two user-defined screen modes, without the inconvenience associated with having to use the Control Panel "Monitors" device.

Screen Gems also includes TN-3 by Dave Winzler Globe by Paul Mercer

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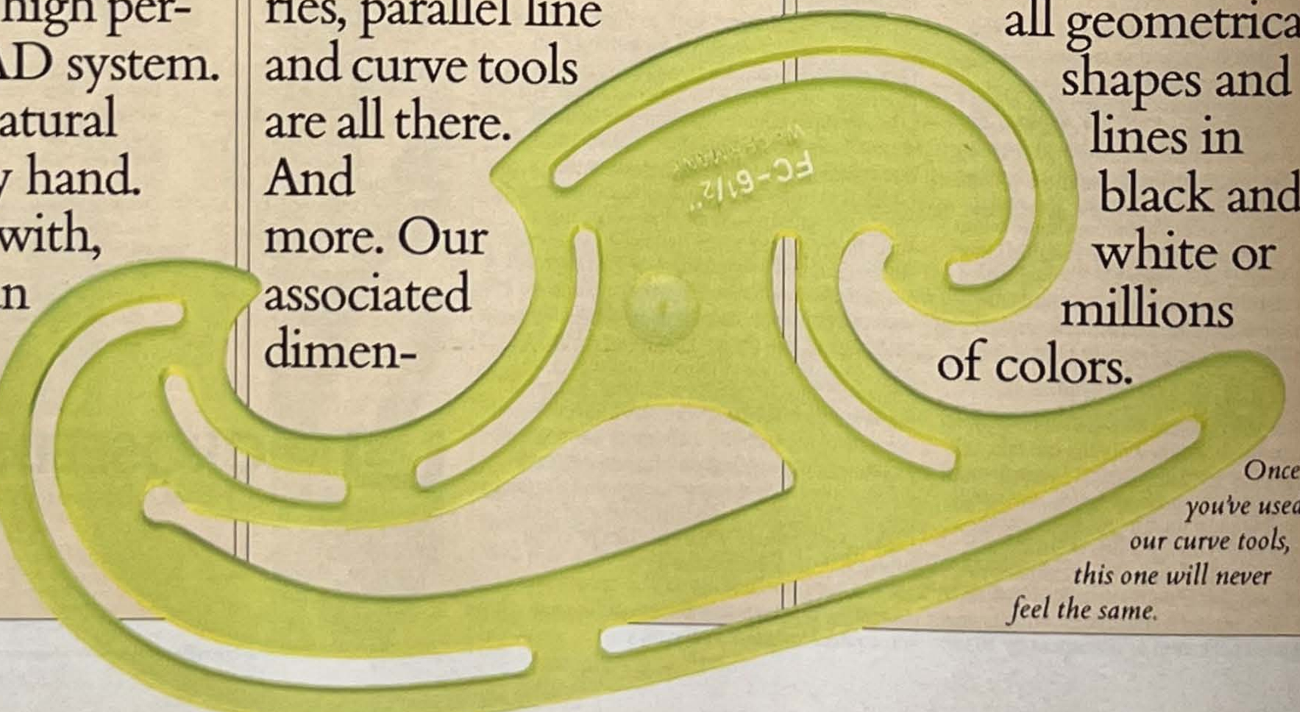

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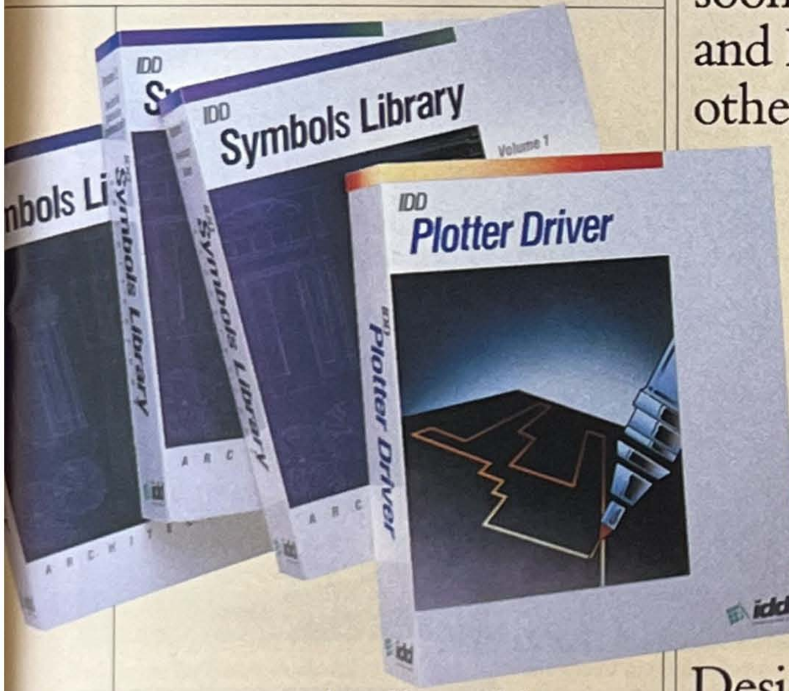

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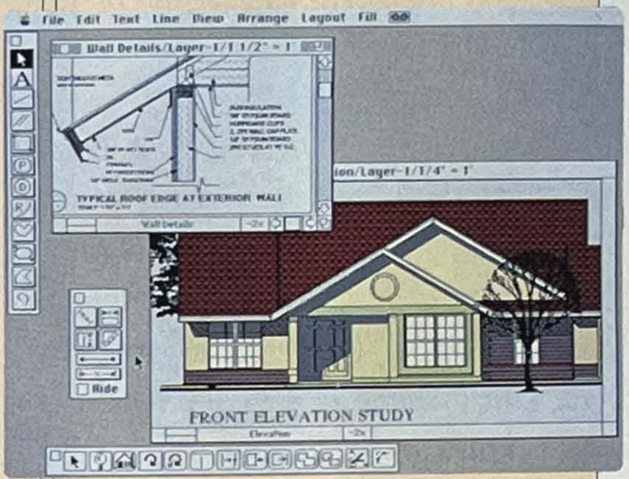
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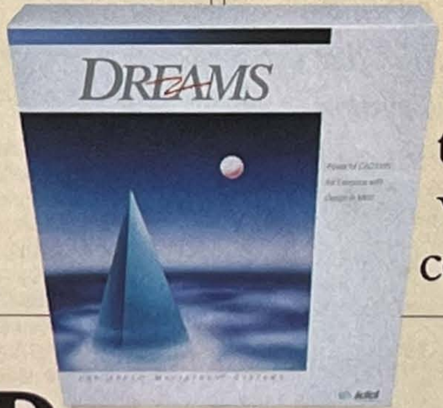

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It's magic ...

Restoring old photos with the Mac II and Digital Darkroom

BY CONNIE GUGLIELMO

Tom Reid is in the lucrative business of restoring old black-and-white photographs, thanks to the Macintosh II.

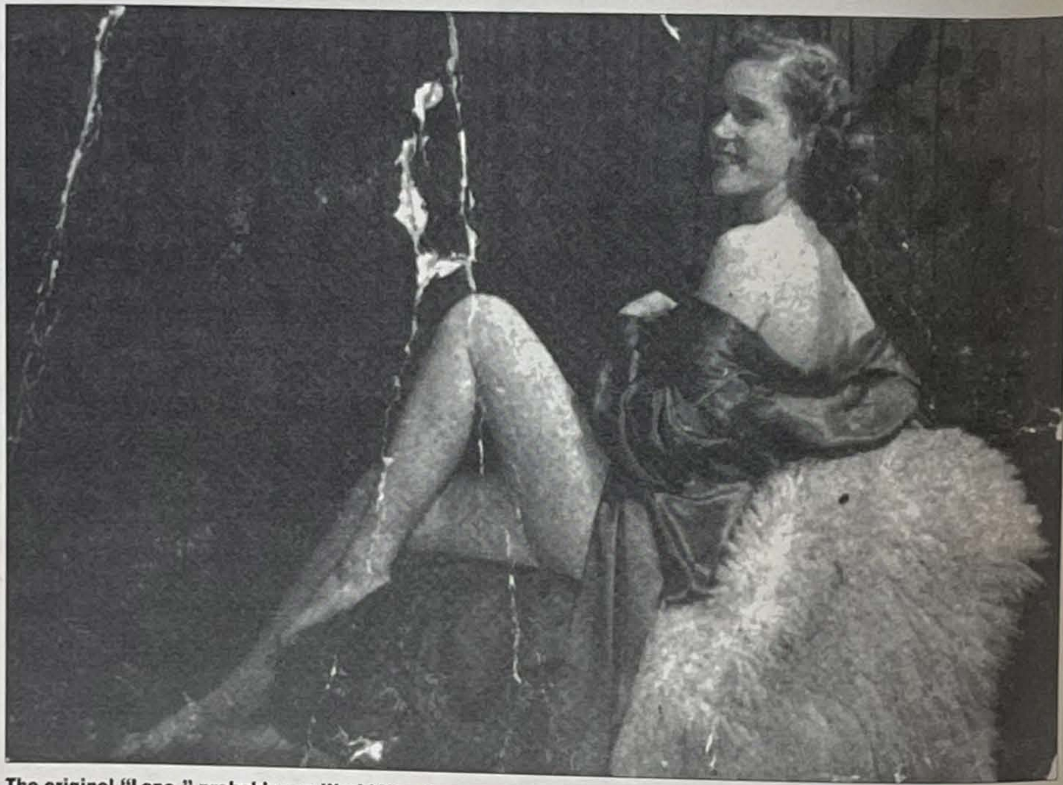
A 20-year regional specialist for Eastman Kodak Co., the San Diego native three years ago opened PhotoCraft, a commercial film lab specializing in black-and-white photography. His goal was to find personal computer technology that would let him duplicate darkroom techniques on the desktop.

After dismissing a $130,000 IBM PC-based system as too costly, Reid turned to the Macintosh II. For less than $30,000, he was able to set up an image-processing workstation for retouching and restoring the more than 700 old black-and-white photographs he gets each month from his customers.

"Everyone's got one," Reid said, gesturing to a pile of photos in need of restoration. "There are a million and half people in the San Diego area. If all of them have an old photograph, we're talking a lot of business."

Reid estimates that his staff of five lab technicians, using the Mac-based system, can do much of the retouching work in an hour — about nine hours less than it would take if the restoration was done with chemicals and traditional lighting techniques in the darkroom.

Not only is the Mac much more efficient, but because of the reduced manpower hours required, Reid can charge less for his restoration work. "I'd say an average photograph could be fixed up for about $75 to $100," he said, noting that conventional restoration work usually starts at about $200.



The original "Lana," probably pre-World War II, represents the boudoir photography of the day.

Reid's image-processing system consists of a Mac II equipped with 8 Mbytes of RAM and a 40-Mbyte hard disk; a 17-inch, gray-scale Big Picture monitor from E-Machines Inc. and companion 8-bit graphics card that supports the display of up to 256 gray levels; a non-glare filter screen, No-Rad Corp.'s dB60, covering the monitor to reduce eye strain; a Kurta Corp. input tablet and pen that replace the mouse; a 400-dpi Microtek 400G scanner; and Matrix Instrument Corp.'s SlideWriter, a film recorder or slidemaker.

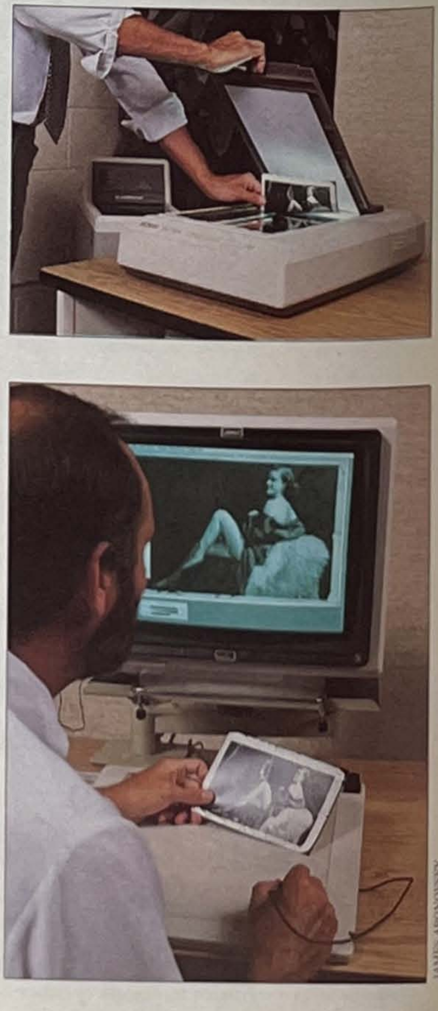
For software, Reid chose Digital Darkroom, a $295 gray-scale image-processing program from Silicon Beach Software. Described as a "computerized darkroom," the program contains image-editing tools such as filters and brushes that sharpen, blur and blend up to 256 gray levels. Any part of an image can be rotated, scaled, flipped, slanted or distorted. The program also offers an array of selection tools, including a Magic Wand that selects only adjacent areas with the same gray values, that lets users select as narrowly or broadly-defined an area that needs to be retouched.

Reid started out using a beta copy of the program, offering Silicon Beach his suggestions on ways to improve the image-editing tools. The final version of the program shipped in August.

❶ The process began with Reid making a copy of the original photograph so that the customer can keep the original print. Reid shot the copy on Kodak Ortho-Copy film 5125 with his Polaroid MP4 Copy Camera, state-of-the-art equipment that reproduces a copy of the original photo with very little, if any, loss of detail.

The photo Reid used was chosen from among the photographs sent to his lab with a request that a copy of the original be made. Reid dubbed the photo "Lana," guessing that the photo was taken prior to World War II and represents "boudoir" photography of the day.

❷ Using the Microtek 400G scanner, Reid scanned in the photo at 300 dots-per-inch. Scan time was about five minutes. The scanned file was then saved as a Tag Image File Format (TIFF) file called "Lana."



JAMES ARONOVSKY

A scanner, input tablet and film recorder are features of Reid's Mac-based retouching system.

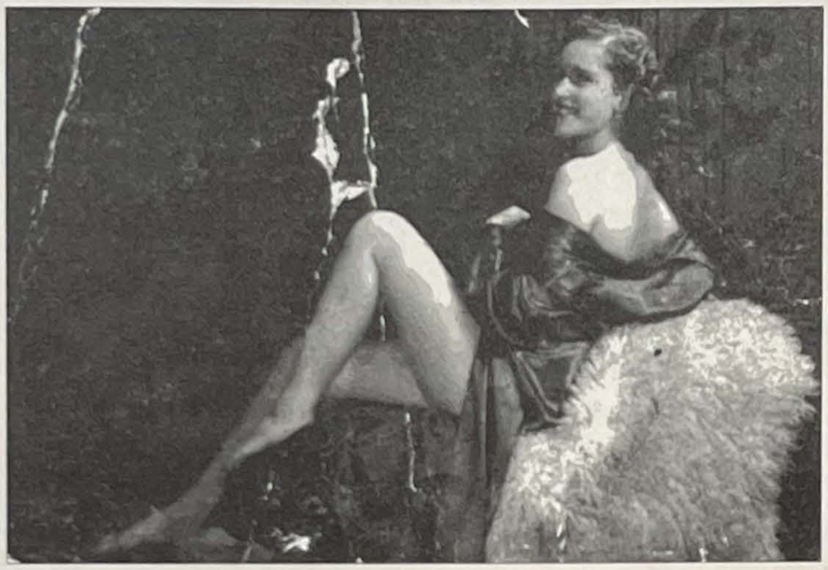


Figure 1

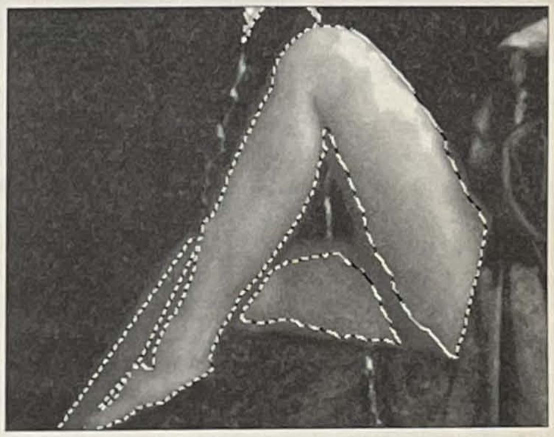


Figure 1a

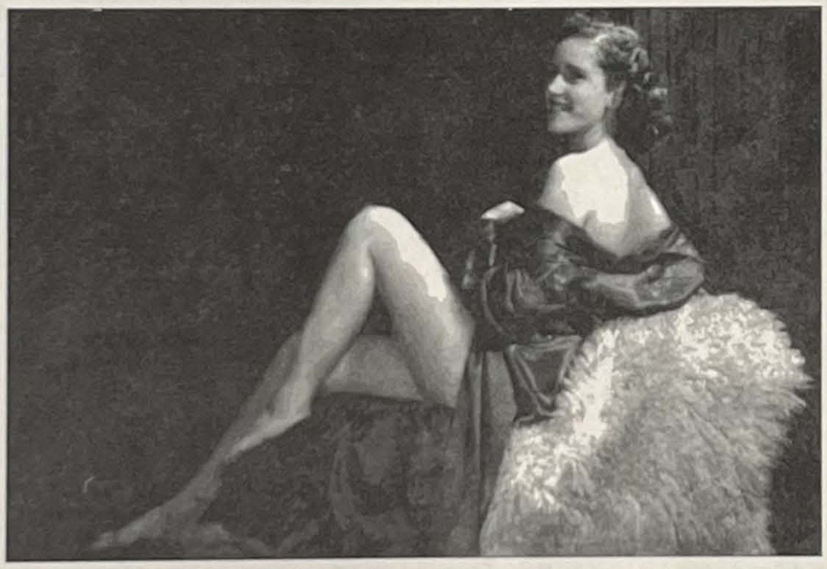


Figure 2

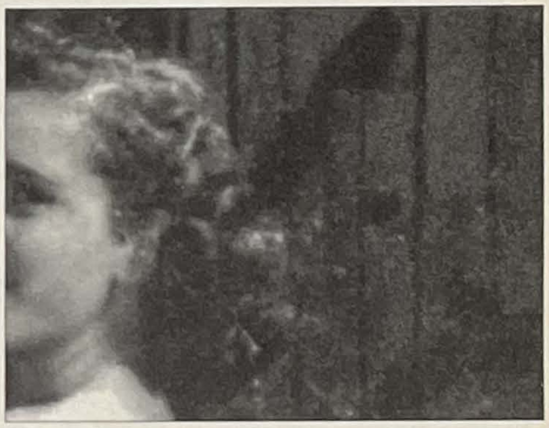


Figure 2a

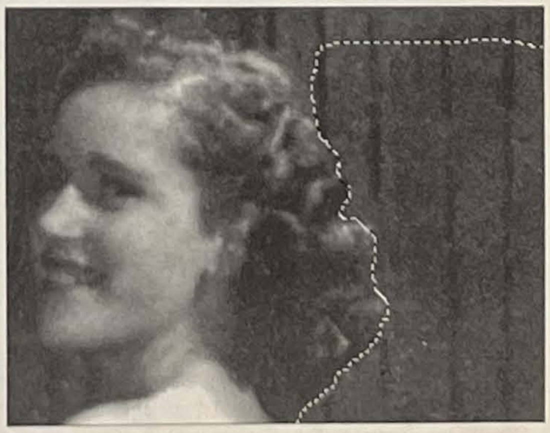


Figure 2b

③ The file was then opened from within Digital Darkroom. Reid controlled the cursor using the Kurta input pad, a drawing pad replacement for the mouse. He prefers using the pad and pen, saying they allow more flexibility and precise control when moving the cursor across the screen.

Ready to begin work on "Lana," Reid selected Digital Darkroom's rectangle marquee selection tool and then proceeded to cut out the white border around the photo. The image sans border was then saved in PICT II format.

④ The retouching work began. Reid decided to concentrate at first on smoothing Lana's skin tone and removing what he describes as skin "freckles." Using Digital Darkroom's Magic Wand, Reid selected Lana's legs. That selection was then run through a Despeckling filter, one of the standard filters shipped with the program. The Despeckling filter eliminated most of the freckles and spots on Lana's legs. The remaining skin problems were then removed using the Smudge tool, which was also put to work on Lana's back and shoulders.

By increasing the overall contrast of the image, he was also able to minimize the curtain detail and, in effect, eliminate some of the stains and white creases marring the background curtain.

His efforts on Lana's skin and the background took about 27 minutes (see Figures 1 and 1a).

If the work had been done in the darkroom, Reid estimated he would have spent four times as long working on the photo. Smoothing skin tone in the darkroom would have required that he use a liquid bleach or reducer to lighten the image. The bleach is rubbed carefully onto selected areas of a print using a cotton swab. After bleaching, the photo is immersed in a fixer bath, a chemical process that arrests the bleach and keeps it from continuing to eat away at the photo. The photo would then need to be dried before the next step of restoration could be done to the image.

⑤ Next, Reid spent about 35 minutes retouching the background, Lana's robe and the sheepskin throw rug on which she is reclining. Using the Texture tool, he transferred the textures or patterns made by the fabrics and fur to adjacent areas where white creases in the photographs obscured the background. With Digital Darkroom's Paint/Fill Only If image control option, Reid essentially told the Texture tool to paint and fill only white areas. This refinement was chosen so that the good areas in the curtain would not be accidentally altered.

The Paint/Fill Only If option was turned off when he retouched the stains to the right of Lana's head. (see Figures 2, 2a and 2b).

According to Reid, most retouchers would not have bothered restoring the background because of the time involved to retouch the background using an airbrush. "A real good artist might attempt to restore the curtain using a refined airbrush, but in most cases, the retoucher would eliminate the background completely. What you would get would be a plain background that is lighter in the center and then gets darker toward the edges," Reid said. "Digital Darkroom lets you maintain the original integrity of the photo. You're not getting an artistic rendering of the original, but as close a reproduction to the original as possible."

⑥ With the major restoration work completed, Reid spent an additional 15 minutes putting on "the finishing touches." Digital Darkroom's Sharpen filter, which increases the contrast between adjacent pixels, was chosen to sharpen dark areas. Using the Lasso selection tool, Reid refined his selection to exclude Lana. He wanted to avoided sharpening her because he did not want

Image enhancement software: Its own niche

Digital Darkroom is only one of several packages available for the Macintosh that offer electronic photograph- or image-enhancement capabilities.

ImageStudio, released last year by Letraset USA, was hailed as the first program to bring halftone editing to the desktop. Halftones, or reproductions of photos made for printing, are scanned in and can be modified by changing gray levels. Modifications are made by passing images through filters and by using a palette of gray-scale paint, pen and brush tools.

ImageStudio Version 1.5, released in July, supports 256 gray levels on a Mac II, up from the 64 levels supported in the original version. The new version also contains a new Memory Management System, making it possible for users to work with images larger than RAM would normally allow.

Like Digital Darkroom, ImageStudio contains an array of user-customizable drawing, painting, airbrushing and selection tools, brightness and contrast controls, and filters for sharpening or blurring images. Images can also be modified by blending, smearing and gradually building shades of gray. In addition, both packages offer special effects, including the ability to rotate, slant, distort and posterize images.

ABA Software is positioning its GraphistPaint II package as an image-enhancement program. The program supports both color and gray-scale editing, allowing users to manipulate up to 256 colors or gray levels on a Mac II screen at once. GraphistPaint II has an automatic contouring feature and is also capable of turning any part of an image into a sphere. Its palette of image-editing tools includes an anti-alias brush that allows users to create the illusion of sharper-looking lines by blurring the edges of pixels.

Users may superimpose one image over another and then blend or add and subtract colors or gray levels, much like the Paint/Fill Only If option found in Digital Darkroom. A variety of filters, such as blur and sharpen, may also be applied.

SuperMac Technology is offering new image processing tools in PixelPaint Professional, to be released this month, which is the new version of its popular color paint program PixelPaint. With PixelPaint Professional, users can work with either 256 colors or gray levels. In addition to its palette of paint tools, the program offers smearing, blending and anti-aliasing tools. The new Frisket tool works like a mask and lets users paint, airbrush or draw only in selected areas.

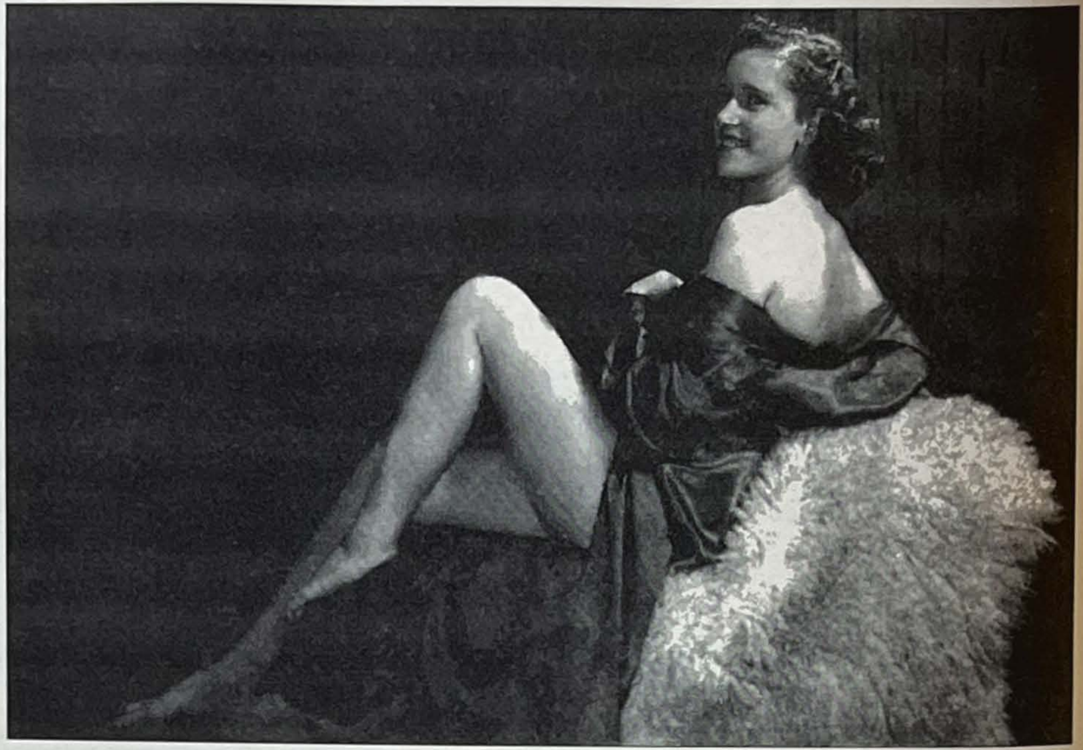
Another color/gray-scale image enhancement package for the Mac is Avalon Development Corp.'s recently released PhotoMac. Although touted for its sophisticated color image processing capabilities, PhotoMac's image-editing tools, like opaque or transparent paint, user-definable airbrushes and an eyedropper tool, also can be applied to gray-scale images.

Arbitrary, irregular or multiple selections may be flipped, rotated and resized. PhotoMac also contains a variety of special effects, including unsharp masking, which sharpens the color edges in the image, and conversion of full-color areas to monochrome or gray-scale.

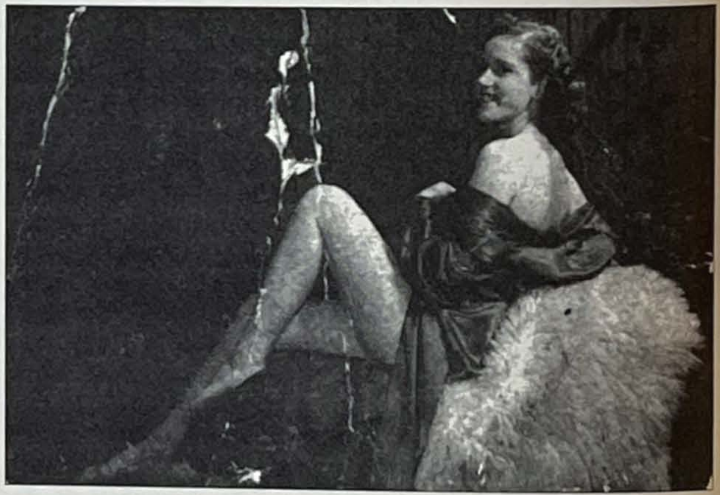
With each of these packages, users may either bring in an image from another source or create the image within the package using the full-featured painting and drawing tools available.

While Tom Reid uses a scanner to capture images for his retouching work, Mac users can also bring images into the computer using a video digitizer. A variety of color and gray-scale digitizers are available that let users capture live images from sources such as video cameras or videocassette recorders.

— By Connie Guglielmo



The final result. Electronic retouching produces a dramatically improved image that retains the integrity of the original photograph.



to undo the earlier work spent smoothing her skin.

After sharpening, Reid lightened the curtain to the right of Lana's hair. Using the Lighten tool, he was able to clearly differentiate between her hair and the curtain.

❼ Satisfied with the restoration, Reid saved the file and then output it to the Matrix SlideWriter, a film recorder that stores the image on black-and-white film with a resolution of up to 4,000 lines. Although the SlideWriter is designed for film speed of ASA 100, Reid prefers the results achieved with Kodak TMAX ASA 400 film. The difference in film causes the SlideWriter to overexpose the image. Reid compensated for this overexposure by underexposing the film when he developed it in the darkroom, a photographic technique called a "pull process."

It took about 22 minutes for the film recorder to scan the file and record the image on film.

❽ When the film recorder scan was complete, the film was removed and developed in the darkroom using conventional black-and-white developing techniques. It took about four minutes to process the film, which was developed on paper with a matte finish.

❾ The final result. "When you talk to a photographer about electronic photography, the learned statement is usually, 'It's interesting. It's coming. But the resolution is not there yet.'

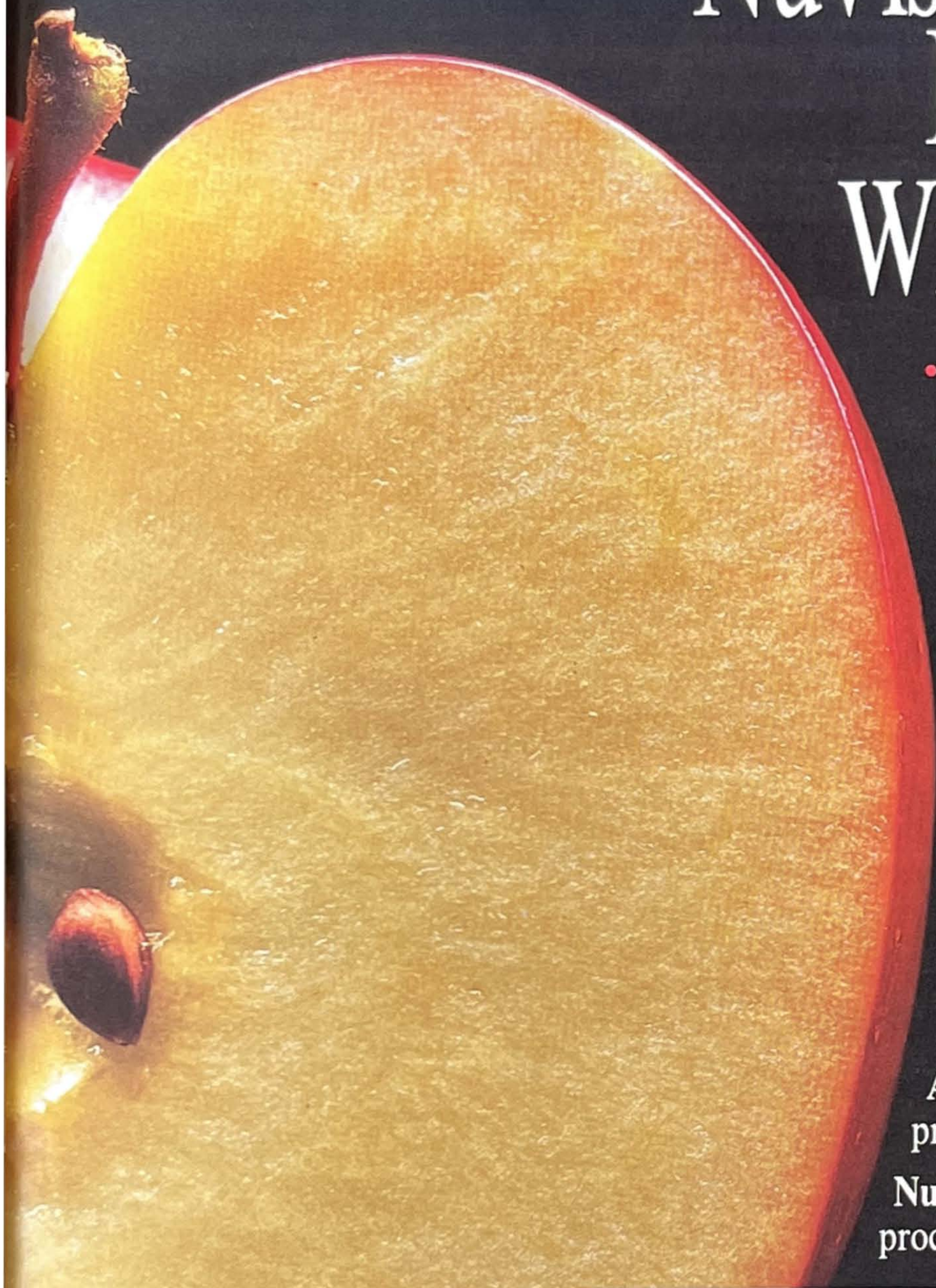
"What I'm trying to show is that the resolution is there."

In time, Reid expects to expand the operation from one workstation to about five and hire a bevy of art students and lab technicians to handle the growing volume of black-and-white restoration work.

He has also decided to become one of Apple's value-added resellers, offering his Mac-based image processing solution as a package to other photo labs interested in doing similar restoration work.

"This thing does magic," he said, pointing to the Mac, "and magic's always interesting." □

NuVision And The Mac. Image Processing With Apple Appeal



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Your neighborhood service bureau

BY STEPHEN HANNAFORD

Your design job may not stop at your laser printer. Service bureaus, springing up quickly, offer Linotronic output and considerable Macintosh know-how — just the competitive edge you may need. How do you choose the right one?

At what point do you decide to go to a service bureau for high-resolution output instead of using your laser printer? The answer is simple: when you want your document printed on a press.

The moderate 300-dpi resolution of a laser printer is adequate for most internal jobs: the documents, drafts and proposals that will be photocopied and thus be at the mercy of the office copier. But 300-dpi resolution is not always sharp enough. Sophisticated readers can and will notice the compromise in quality. Compared to the cost of writing, artwork and layout, the charges for typesetting are small.

In some parts of the country, it may seem that Linotronic graphics service bureaus are becoming as common as neighborhood laundries. However, sending your Macintosh pages to the service bureau is by no means as simple as sending your shirts out to be cleaned and pressed. Because the client/service bureau relationship is a complex business collaboration, far more can go wrong than a broken button or an overly starched collar.

Founding a service bureau has fallen into the category of "business opportunity" and start-ups are booming. "We have about a dozen direct competitors in the Hartford market," said Bill Tchakirides, proprietor of U-Design of Hartford, Conn.

"Most of those appeared in the last 12 months. A year ago there were five; two years ago there was us," he said.

How do you go about selecting a service bureau? It is not just a matter of equipment, prices and affiliation. For example, the possession of a 2,540-dpi Linotronic 300 is no guarantee of a bureau's quality. Some of the most well-regarded service bureaus used by the graphic designers we talked to had only the Linotronic 100 in-house, which has a lower, but usually acceptable, 1,270-dpi resolution.

You may be able to save a few dollars per page by shopping from one service bureau to another, but it may cost you more time and headaches down the line.

Despite the sometimes-believed myth that LaserWriter and Linotronic output are essentially identical, that "essentially" encompasses a library of war stories that any graphic designer or service bureau operator can tell you about. For example, a screen printed out at a certain value on a LaserWriter very well may not be identical when printed on a Linotronic.

In the graphic design area, the just-in-time mentality prevails. Timely delivery and high-quality matter more than a few dollars. "The real cost to me," said graphic designer Kathleen Tinkel of Tinkel Designs in Westport, Conn., "ends up being the cost of messengers and turnaround time lost. Time is the cost everywhere."

Having a full-scale printing operation behind the service bureau can be a big advantage and convenience. On the other hand, if the service bureau is involved in other lines of business, problems can arise, particularly if the service bureau angle is used as a loss leader to lure customers into what is perceived as the main business of the company.

Be wary of companies that lock you into printing services with cheap imagesetting fees. It is all too likely that the company won't take the imagesetting aspect seriously.

You should look for some things when shopping around for a service bureau. In talks with designers and proprietors of highly recommended service bureaus, certain features about service bureaus kept coming up. The following three areas stand out as critical:

- **Knowledge of the Mac.** John Tomeny, an outspoken designer and the owner of Printing Services Management, a graphics and page-layout company in Lebanon, N.H., works with Sprintout, a service bureau in Providence, R.I.

He chose the service bureau because "it has an in-depth understanding of PostScript and the potential problems associated with file transfers and output. All of the other service bureaus needed me to hold their hand and teach them the things it should already know."

"Within five miles of my office there are three Lino 300 systems, at service bureaus or printers. I could hand off my files to these guys, and then spend hours consulting with them — or telecommunicate my job to Sprintout and have them get the job right at once.

"The people at Sprintout know what they're doing. They take the time to learn the programs. So many other service bureaus I have worked with only know how to output the pages; they don't take the time to learn the software," he said.

The knowledge required is quite extensive. The service bureau must have expertise in Mac system software, including the latest System and Finder bugs, incompatibilities and ways to get around them.

The bureau must know about file formats like EPS, TIFF, PICT, PICT II and MacPaint, and how to convert and resize among them. It has to know what Laser Prep does, how it differs from Aldus Prep, how to handle a PostScript file and how it differs

Continued on page 32

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The drawing shown at right was created in Illustrator 1.1 by Michael Scaramozzino. The file was sent to Sprintout for Linotronic output at 2,540 dpi.

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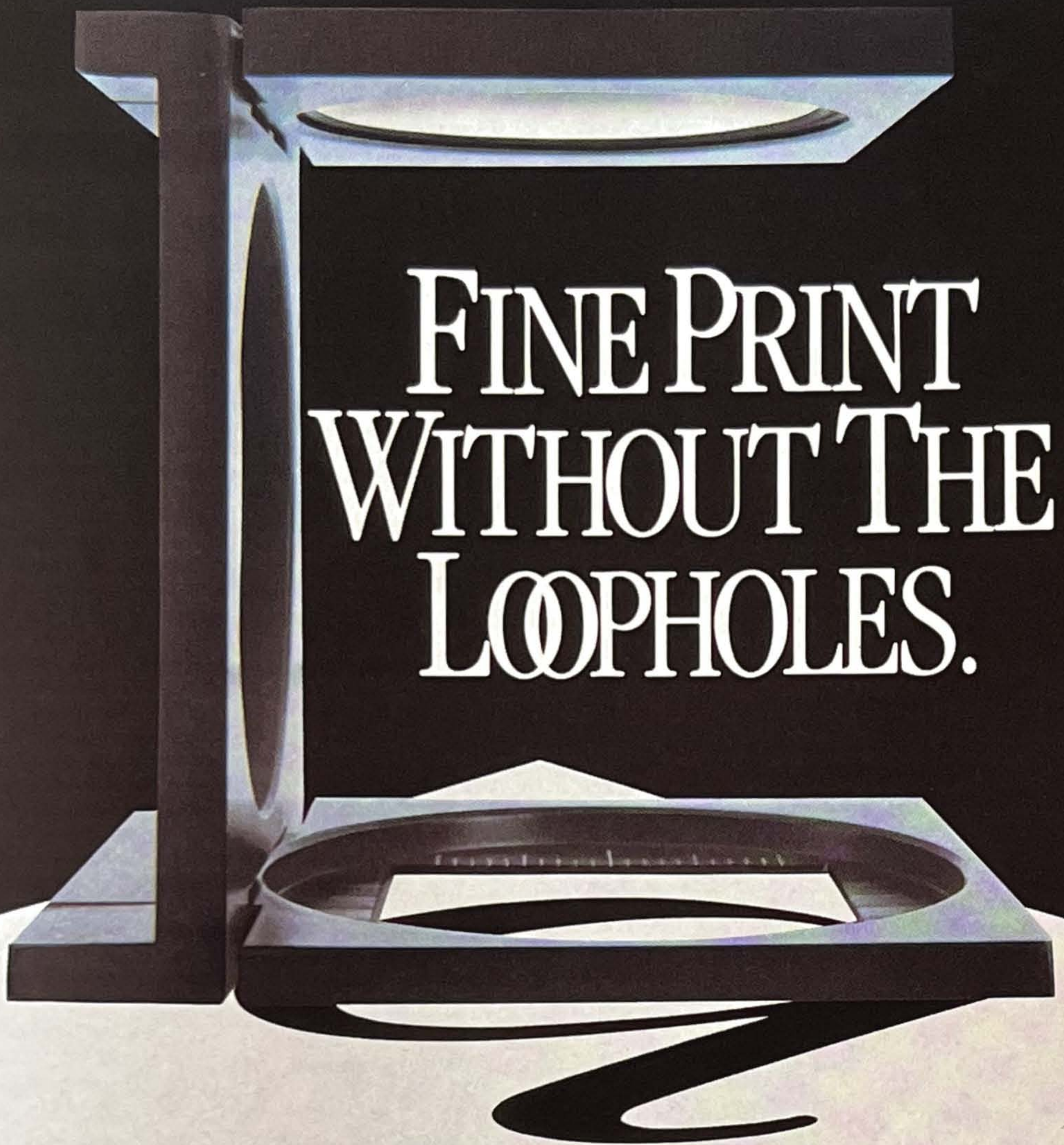

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Continued from page 30

from Encapsulated PostScript.

Most importantly, the bureau should be able to locate the problem when a document fails to print correctly — whether the problem is with the System, application, document or Linotronic equipment.

This kind of knowledge comes from study and experience. The best operators read Apple tech notes and comments on CompuServe and are on the phone with Aldus, Adobe, Linotype and Quark.

Furthermore, they must be knowledgeable about fonts, a particularly vexing problem for users of service bureaus. Even within the confines of Adobe-supplied PostScript fonts, several major problems exist. The most troublesome arise from the limited number of font IDs supplied by Apple. Some fonts have identical ID numbers, resulting in unexpected font substitutions (see "Accessing large font libraries," Page 18).

Other font problems include incompatible font versions from Adobe, differences between screen conversion of certain fonts into italic and bold and their actual appearance when printed, and inconsistencies between Apple and Adobe screen font spacing. A notorious problem is the confusion between Narrow Helvetica (a pseudo-condensed font created by reproportioning Helvetica) and Condensed Helvetica (a true font).

Kay Downs, marketing director for Waldman Graphics of Pennsauken, N.J., recounted a typical problem. "Adobe changed the name of the screen font of the Helvetica Oblique font, so people using older versions of the screen font would have trouble. The oblique font would be called out and the Linotronic would substitute Courier. We spent hours trying to figure out what happened." Many good service bureaus are Adobe dealers and can supply the correct screen fonts for Adobe fonts, keeping users up to date on the latest available fonts.

Perhaps even more important is expertise in specific applications. It is a tall order to know the peculiarities of PageMaker as opposed to those of XPress, to know what is possible in Illustrator 88 as opposed to FreeHand, to keep track of Word and WordPerfect, and especially to keep up with incompatibilities, new releases and subreleases of these products.

Resolving printing problems and addressing the breakdowns in customer files absolutely requires that kind of knowledge. The best service bureaus often beta test new versions of programs and are ready for the glitches before the general public is. As Tomeny said, "The better bureaus are often testing the next generation of products."

Expertise in PostScript is essential for running an efficient service bureau. While actual PostScript programming is generally not required, the ability to decipher obscure error messages can be the difference between making a minor fix and having a major disaster.

Steve Werner, manager of Central Graphics in San Diego, told a relevant anecdote. "Someone sent a copy of a PostScript file to us and to a new competitor in town. Apparently the competitor had run into a problem with the error message 'Aldus Dict 2.' I realized that it meant that when they created the file, they had to download the Aldus PostScript driver. The error message meant that it was looking for the Aldus dictionary that defined all Aldus procedures. The competitor didn't know what was going on. We'd been around longer. This kind of thing is going to happen a lot."

Testing the expertise of your service bureau is easy, said Tomeny. "Before picking a bureau, speak with its customer support person. Ask that person all of the heavy questions you can think of about PageMaker, FreeHand, Illustrator and other programs you might be using. If he or she doesn't know as much as you do or more, keep looking. A good service bureau also uses the software it supports and knows it thoroughly enough to support its customers on a technical level," he said.

The educational process is constant at a good service bureau, Downs said. "Every six months we get a Lino update, a new System upgrade and several program upgrades. We're in complete chaos for a couple of months. We're running all of the old programs with all of their problems and all the new ones and their problems, and we have to know everything about all of them. Then we get to a certain place in the learning curve and it starts all over."

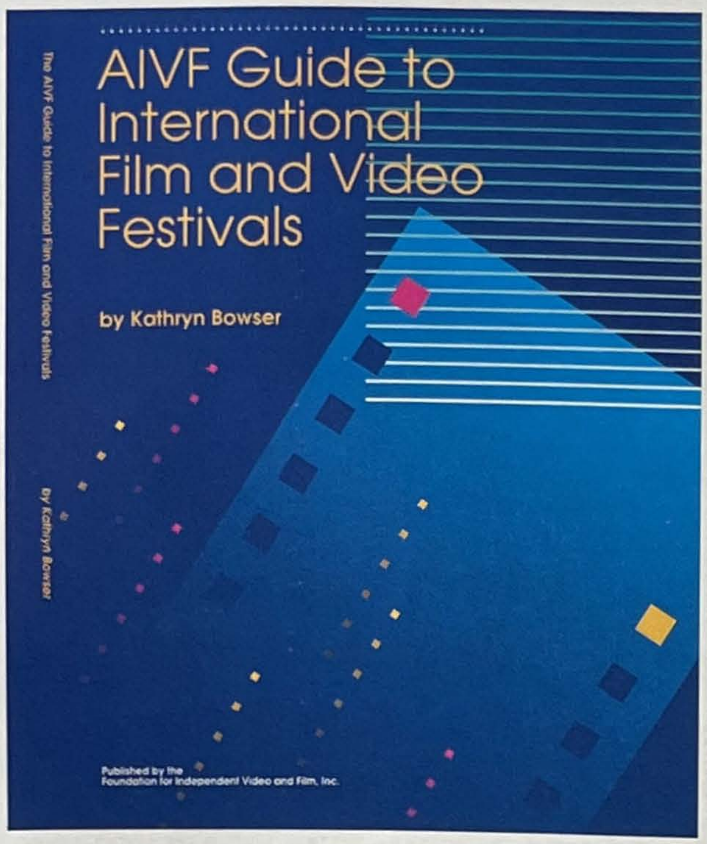
• Knowledge of the profession. It is not enough to deal with a set of computer hackers in a service bureau. You have to find someone who knows the requirements of the graphics profession as well. A variety of backgrounds fit into this profession. Experience in graphic design is a good starting point because those who understand the clients' business can also speak their language.

Many service bureaus are based on traditional typesetting houses. Such houses are aware of the business aspects (high quality and deadlines) and have a feel for the needs of the graphic designer and the printer alike. Having in-house press and camera experience is a big plus as well. As color printing and halftones become more widely used, in-house knowledge of these processes is a big advantage.

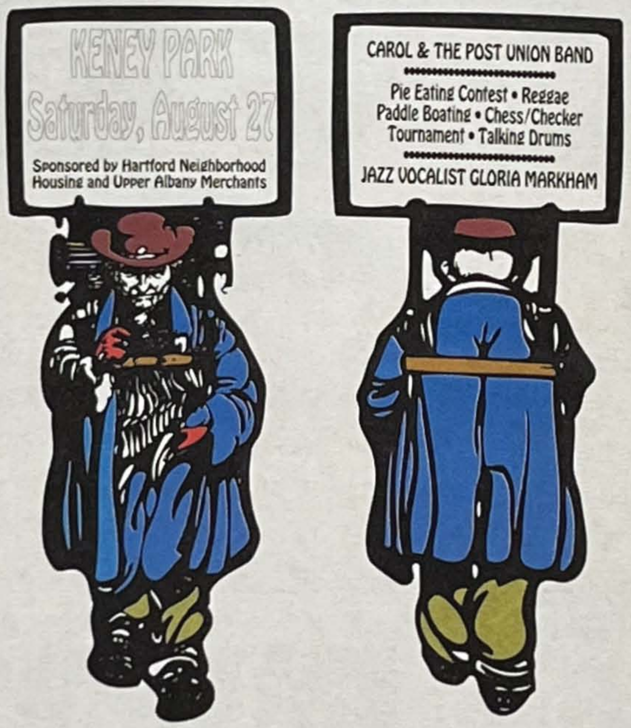
"I don't know how people who don't have an operation like ours manage to do it," said Downs of Waldman Graphics. "Because we have Scitex systems here, we have color experts, camera experts, screen experts and trapping experts. If you don't understand

Continued on page 34

Waldman Graphics color separated, customized and output the artwork at right at 2,540 dpi on negative film The original was designed by Terrie Dunkelberger using Illustrator 88.


AIVF Guide to International Film and Video Festivals
by Kathryn Bowser
The AIVF Guide to International Film and Video Festivals
by Kathryn Bowser
Published by the Foundation for Independent Video and Film, Inc.

Designer Linda Ambrose used Illustrator 88 to create cut-out models shown at right for a two-side standing sign.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Checklist for selecting a Linotronic service bureau

Your service bureau does not need to score 100 percent, but it should have many of these qualifications:

- ✔ Uses current System and Finder (and expects its clients to do so also).
- ✔ Has up-to-date knowledge of Macintosh developments (reads magazines, follows dial-in forums, keeps up with Apple tech notes).
- ✔ Knows your layout application as well as or better than you do.
- ✔ Has in-house PostScript expertise.
- ✔ Has a track record in business (more than one year).
- ✔ Understands typesetting quality issues.
- ✔ Has clearly stated policies (perhaps in a well-designed and typeset brochure).
- ✔ Has all Adobe fonts.
- ✔ Has a strategy for dealing with font ID conflicts.
- ✔ Offers training services.

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Continued from page 32

every aspect, including ink and paper, how can you do it?"

A good service bureau should be able to advise you on what will and won't work, based on real experience. Some service bureau clients want direct help and suggestions in design and layout matters. Advice and experience in the mainstream design and printing world become much more important with the use of color, halftones, preparation of negatives and so on.

Norman Cahn, designer and proprietor of the Norman Cahn Design Studio in North Edison, N.J., said he evaluates the competence and professional quality of a service bureau's own output.

"I can usually tell a lot about a service bureau from a booklet about its procedures. That tells a lot about its professional competence," Cahn said. "I also ask what its experience in the business is and what it did before setting up a service bureau."

- **Good business practices.** Probably the most commonly mentioned requirement is good business practices. These include scheduling, quality control and service.

Marjorie Spiegelman, president of Spiegelman and Mandel of San Francisco, suggests a nuts-and-bolts discussion with the proprietor of the service bureau. "You want to say, 'I am a designer. I want a long-term relationship. I have clients that have specific needs. Will you give me the support I require or do I stand in line with all the desktop publishers?' See if the guy can talk business that way."

A good service bureau has organized methods for taking orders, getting customer requirements, scheduling and tracking the progress of a job. For example, Central Graphics uses what it calls a "Disk Output Request Form." Werner said, "We give these forms to all our customers and try religiously to train them to use them. All the information (file name, pages to print, percent of reduction/enlargement, percent of copies, crop marks/registration marks, spot color, fonts used, etc.) should be recorded." Such methods help avoid problems, and are a good indication of a well-organized shop.

Quality control is another key issue. A good service bureau maintains its equipment carefully, so spotting and blotching from old chemistry is not a problem. It also checks the output carefully to see that it matches requirements — that fonts are in place and pages match a LaserWriter proof.

Tinkel has found that the right attitude toward quality separates the winners from the losers. "Quality of the output is one of the big issues. If your standards are conventional typesetting, you know how your repro should look and how density on Monday should match the density on Wednesday on the same job. Keeping that consistent quality is a hard thing. Only the best service bureaus do a good job."

"What you want is a service bureau that takes as good care of you as typesetters do," said Cahn. "Just about anyone can put a disk into a machine. I want someone who will look at a file after it comes out, and if he is having problems with it, to give me a call. I'll pay a few dollars more a page for that kind of service."

Another part of the mix is a clearly stated financial policy that lets customers feel that they won't end up paying for the service bureau's mistakes.

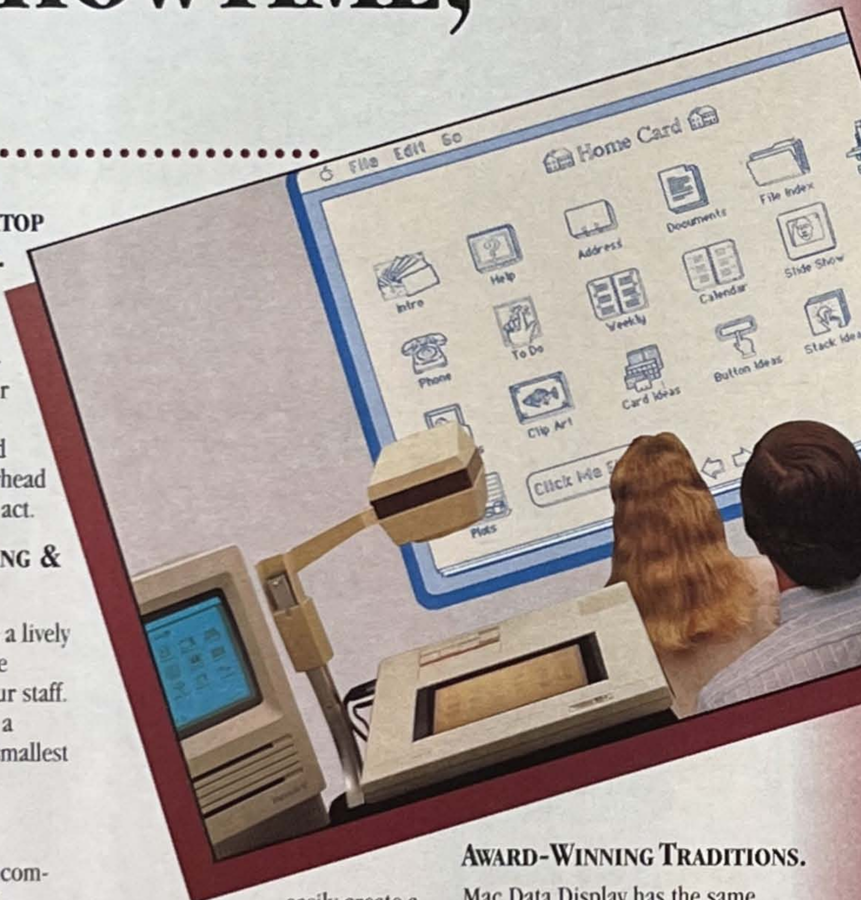
"If the job is long, I try to talk to the service bureau," said Tinkel. "The main question is: Which things is it responsible for? If there's font substitution, I'll be willing to pay for the first one if it's my error, but I don't want to pay for the whole 12 pages. The service bureau should have to eat the other 11. Somebody has to look at the output. Even a place that doesn't care has to be forced to look."

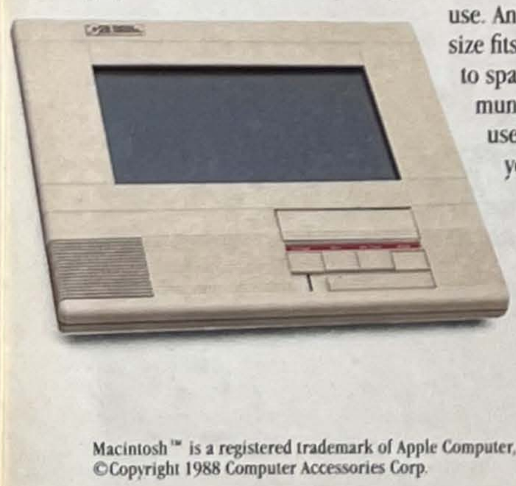
Choosing the right service bureau does matter, especially when problems arise on the Linotype machine. And, as one service bureau operator said, "Problems always arise!"

Michael Waitsman, designer and principal of Synthesis Concepts in Chicago, summed it up, by saying, "We've sent over things we were pretty sure wouldn't cause problems — and they have. But the service bureau tries everything, and often manages to get things to print, and save our behinds.

"We had a situation recently where a certain word wouldn't print out on the service bureau's Lino or its LaserWriter, though it printed out fine for us on the LaserWriter. After much investigation, it was found that we had two different versions of an Adobe Garamond font. I had an older version of it. That's the expertise money can't buy — that's what makes for a great service bureau." ☐

Stephen Hannaford wrote "Cyan, Yellow, Magenta, Black" in MacWEEK's May 17 Graphic Arts Supplement.





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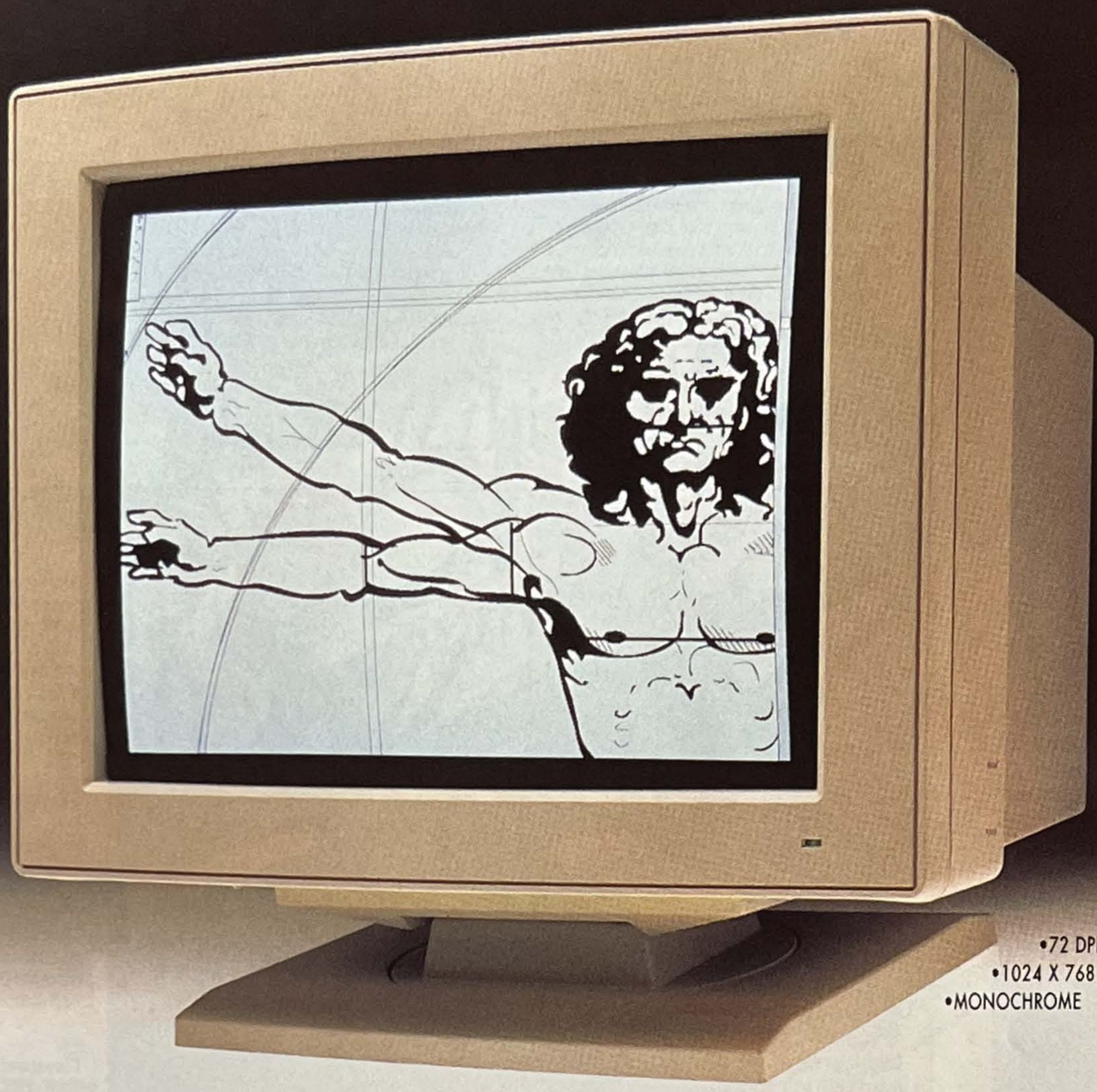

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Some notable service bureaus

In talking to designers, the names of a number of fine service bureaus came up. In sharing these names, no recommendations are implied. Be aware that there are many other fine operations throughout the country. In this listing, we have tried to provide a wide geographical sample of service bureaus.

Sprintout (Typesetting Service Corp.)
Providence, R.I.
(401) 421-2264

This service bureau seems to be one of the technical leaders, consistently mentioned all around the country for its pioneering work, especially in the area of color. Sprintout has two L300s, one of which is dedicated full-time to desktop publishing and prepress. The enterprise has years of experience in traditional typesetting and provides in-depth PostScript expertise as well. Among the many services offered are training, a 24-hour bulletin board that can receive at up to 19.2 Kbyte baud rate and color scanning.

U-Design
Hartford, Conn.
(203) 278-3648

"We are very selective about the programs we support. We also run a design business. If a program doesn't run well for us, we don't recommend it to anyone else," said proprietor Bill Tchakirides. The service has two L100s; one runs film, one runs paper. U-Design has been in business since July 1985. It offers full image-setting services as well as rental time on the Lino, LaserWriter and gray-scale scanner.

Waldman Graphics
Pennsauken, N.J.
(609) 662-9111

In business since 1974 and in the Mac environment since 1985, Waldman Graphics offers extensive typesetting and printing facilities in addition to its service bureau. A Scitex scanning system is also available. Four L300s are used for Mac and conventional typesetting. Clients include high-end designers, corporations and ad agencies.

ProTypography
Chicago, Ill.
(312) 266-8973

ProTypography offers an L300 and a QMS ColorScript printer. It has been in the typesetting business for six years and in the Mac environment for three. It offers typesetting, design and scanning services.

TSI
Cleveland, Ohio
(216) 241-2647

TSI has an L300 and a Mac environment. Its Mac expertise is bolstered by an on-site development group that writes file conversion and other software. Specialists in data conversion, TSI has 27 years of typesetting experience.

Datavision
Fort Lauderdale, Fla.
(305) 763-4205

This unusual combination of advertising agency and service bureau serves the graphic design market of southern Florida. It has an L300 and one-and-a-half years of experience as a service bureau.

Typografiks
Houston, Texas
(713) 861-2290

Typografiks has been in the typesetting business for 11 years and has been a Linotronic (L300) service bureau for one-and-a-half years. It specializes in file conversion and offers a choice between conventional typesetting and the Mac type.

Design & Type
San Francisco, Calif.
(415) 495-6280

In business for 16 years and in the Mac environment since 1986, Design & Type's service includes L300 and traditional typesetting equipment. In a city where service bureaus rival MacDonald's in abundance, this one is consistently mentioned by design professionals.

Central Graphics
San Diego, Calif.
(619) 234-6633

With two L300s and 34 years of experience, this is one of the largest service bureaus on the West Coast. It offers 24-hour bulletin board, design and camera services, scanner work and more than two-and-a-half years of Mac experience. — By Stephen Hannaford

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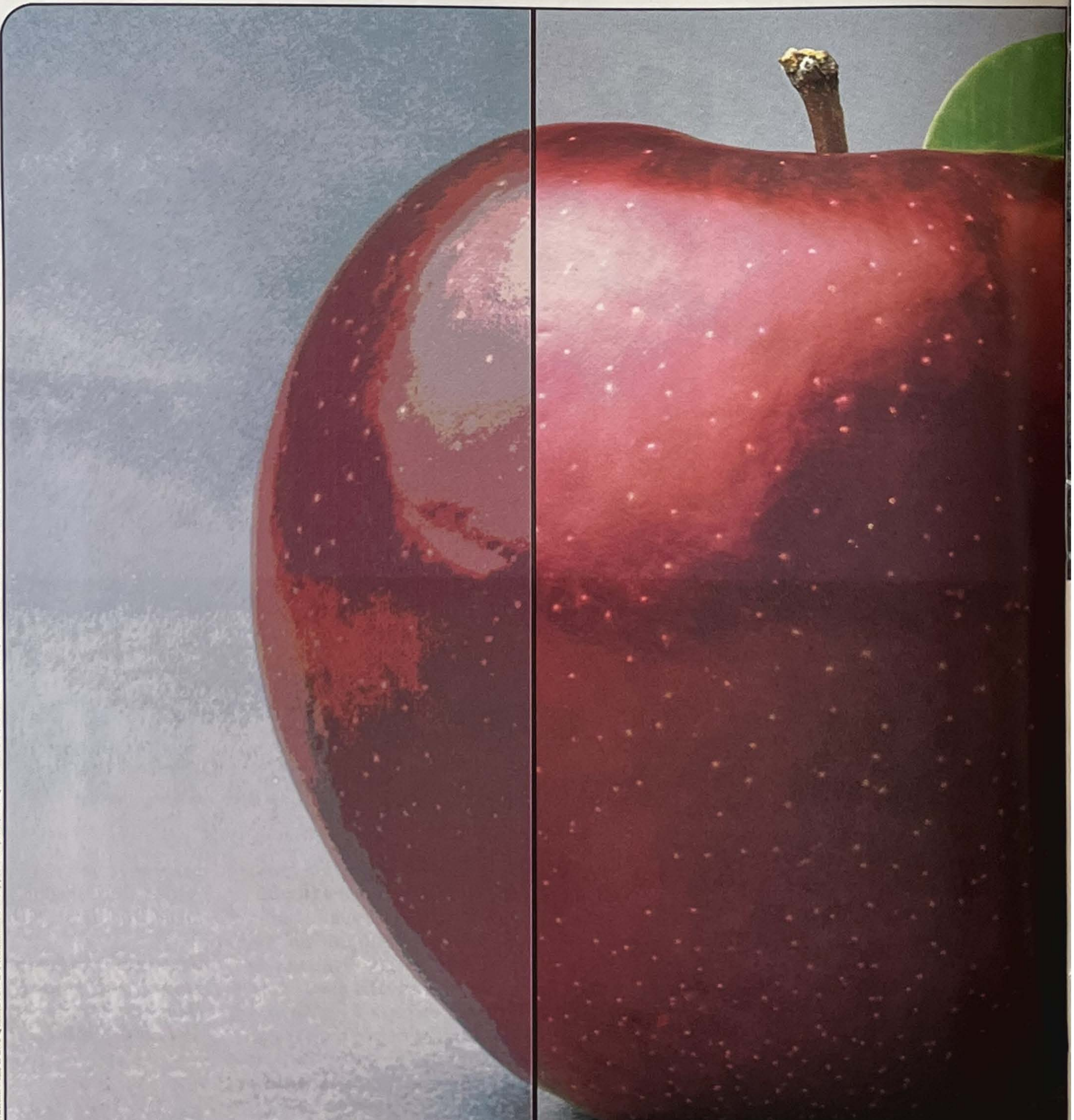

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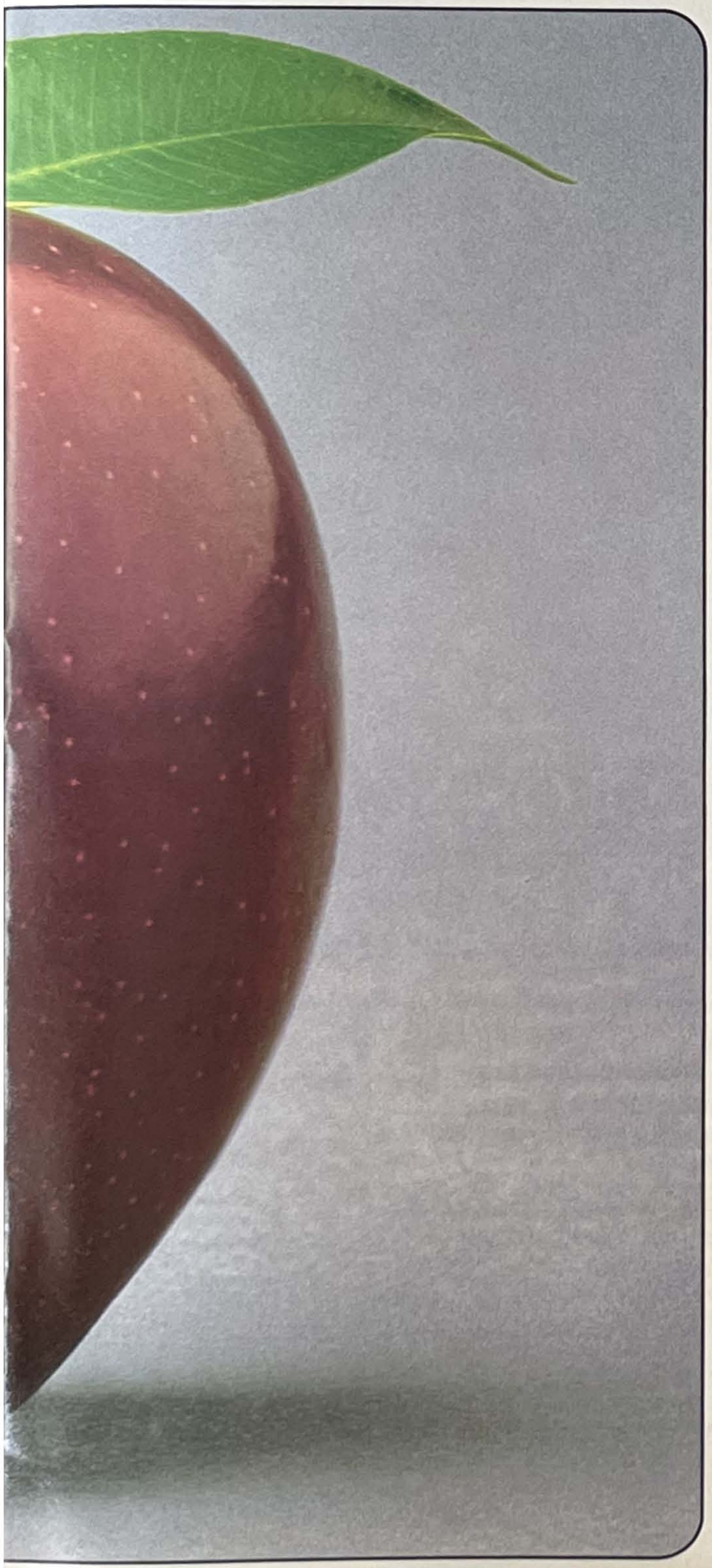

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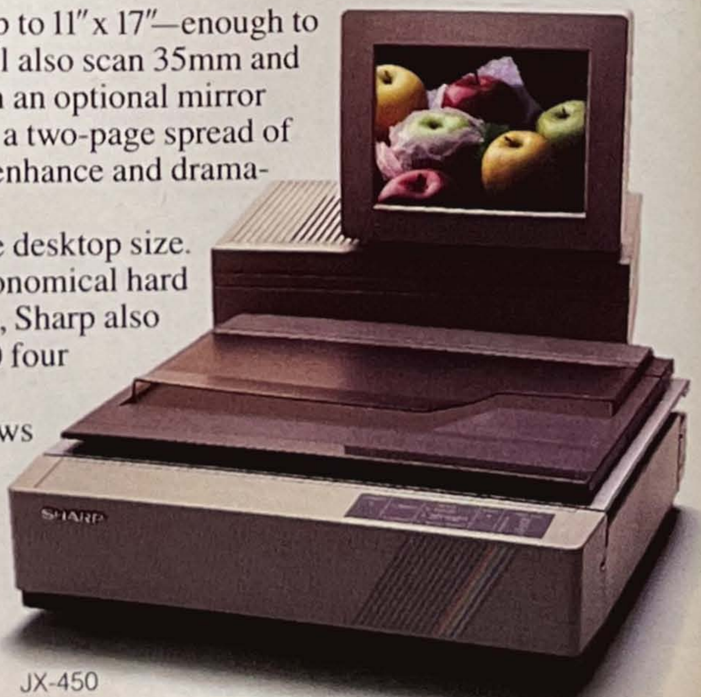

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Portrait of the artist

Mick Wiggins illustrates Raymond Loewy

BY RANDALL KINCAID

Even Hollywood recognized the fascination we all have with artists at work. Remember Kirk Douglas as Vincent van Gogh and Charlton Heston as Michelangelo? Here, the fascination continues as MacWEEK followed professional illustrator Mick Wiggins at work on his Macintosh easel — from assignment to the finished portrait of 20th century industrial designer Raymond Loewy that you see published on our cover.

Trained in traditional media, Mick Wiggins has longtime emotional ties to brush and oils. Yet, he is a pioneer artist in using Macintosh hardware and software for professional illustration. His work on the Macintosh goes back five years.

"With the Mac, I can disassociate myself and be more objective about my work. That can be an advantage in producing work to a client's specifications," Wiggins said. "It's faster and more malleable in some ways. There seem to be fewer disasters. I can start with one idea, yet do a 180-degree turn at the last minute without throwing out the canvas and prepping another or losing hours of brush work.

"I am ambivalent toward the Mac as an actual medium. I try to limit the hours at the screen because I find it hard on the eyes. But I admit that I'm a better illustrator with it. I have a better batting average of work that I consider successful. I think I care more about painting as a medium, so I'm dissatisfied with my painting work. Oils are a sensual medium. With a Mac, I don't care less about my work as a professional, but let's face it, pixels are either on or off, one color or another. There are a limited number of choices that end at the pixel level. You can't make a creative decision based on a half-pixel. You can't get your fingers in the pixels, you can't smell a pixel.

"Clients are loosening up in their thinking about Macintosh-produced work, getting past the Macintosh as a gimmick. It's no longer considered only as a self-referential medium. It's nice to be asked to render computer images that don't refer to a computer as a subject."

The tools. Wiggins' Macintosh hardware and software reflect his personal focus as an artist, not a Macophile. His Macintosh II has 1 Mbyte of RAM and 40 Mbytes of storage on its internal hard disk. The monitor is the AppleColor high-resolution 13-inch RGB model. The only programs installed on his Mac are Microsoft Word and PixelPaint from SuperMac. In fact, Wiggins is not really familiar with Word. He prepares invoices to his clients in PixelPaint.

"I like PixelPaint because it's the one I got used to. I have worked on Adobe Illustrator, Aldus FreeHand and SuperPaint. But I can't know every program completely and well. It just isn't financially feasible for an illustrator to spend working hours reading manuals and learning new programs," Wiggins said.

❶ **The assignment.** For this step-by-step article, Wiggins was given what may be an illustrator's fondest wish: a self-specified assignment. The only limit given to him by Eleanor Leishman, MacWEEK's art director, was that the work be indicative of a real illustration project.

"This is an ideal assignment as an illustration. And it is an illustra-

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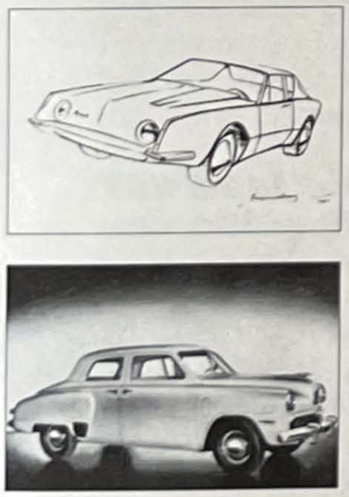
The subject



The Avanti and Studebaker above were among the many cars shaped by Loewy's distinguished design.

His American design career started with a disastrous one-day stint as a window dresser for Macy's department store. But, from there he went on to a career spanning more than half a century, shaping the visual ideals of the twentieth century. His name was Raymond Loewy, the only designer ever honored on the cover of Time magazine.

Loewy was born in Paris in 1893. He came to America penniless in 1919 and later became a naturalized citizen. Slowly, he pursued a dream of building aesthetics into manufactured objects. Finally, he sold his concept to Gestetner Co. The redesign of its duplicator in 1929 is generally accepted as the first clear example of industrial design.

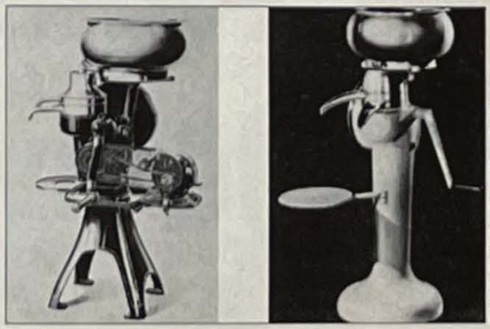
Today, you still see his work on a daily basis. You see it in supermarkets in the corporate emblems of Sealtest and Canada Dry and in the packaging of Armor canned meat, Lucky Strike cigarettes and Coca-Cola.

Loewy's influence is on the highway, in signage for Exxon and Shell, in the Greyhound emblem and the shapes of its buses, and in the shape of the nation's automobiles. Many elements of today's cars echo his design work for Hupmobile, Studebaker and Lancia.

His contributions to transportation travels beyond autos. In his career, he produced designs for locomotives, ships, taxis, Farmall tractors, Air Force One and even the Apollo Skylab.

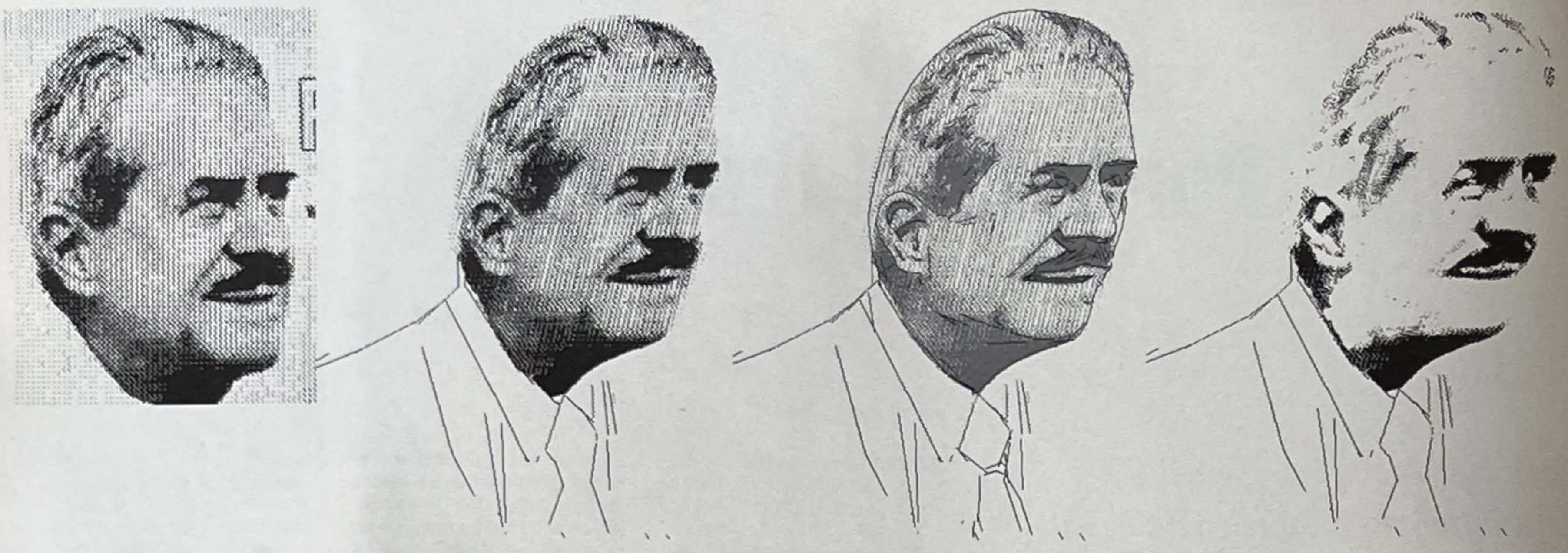
After a long life of notable accomplishments, Loewy passed away in Monaco in 1986. As the world's first industrial designer, Loewy's influence has touched every designer to come after him. And in this way, he touched one of the biggest design successes of our time — the Apple Macintosh computer. — By Randall Kincaid

The photo of Loewy in his office was taken in 1934 for the Metropolitan Museum of Art in New York.



At left, the McCormick-Deering cream separator, before and after Loewy's influence. Loewy redesigned the unit with simple, streamlined elements for easier cleaning.

All photographs of Loewy's work and the photograph of Loewy which Wiggins scanned are used with permission from "Industrial Design," by Raymond Loewy, © 1979, published by The Overlook Press, Lewis Hollow Road, Woodstock, N.Y. 12498. A paperback version will be published January 1989.



From the original scan of Loewy's portrait Wiggins went to work, elongating, tilting forward, and delineating Loewy's face.

Continued from previous page

tion that is not what I consider pure art," said Wiggins.

"As an illustration, I knew it must have a purpose. Just as a client would have reasons for assigning an illustration, it must visually depict a particular subject or article. Without this purpose, I could have just chosen to paint flowers or a sunset or just see how fast I could crank it out. So I gave myself an assignment subject that I would like to receive from a client."

Wiggins decided to create a portrait of Raymond Loewy, the renowned American industrial designer. Acclaimed for his prolific designs ranging from household appliances to corporate emblems to locomotives, Loewy ranks among the elite of industrial designers.

"He synthesized modern aesthetics. I selected Loewy because his work interests me, yet I had limited knowledge of him," said Wiggins.

So Wiggins' first step in this project was a stop at the Berkeley, Calif., public library. He sought out articles and books on Loewy's life and work.

"I saturate myself with information, then take time to let it soak in. As the top industrial designer of this century, Loewy was involved with so many objects. I became more and more intrigued by the variety of objects he designed: toasters, printing presses, automobiles, buildings, even locomotives.

"In this initial idea-gathering stage, my concept was to let his work be an integral visual part of the portrait. My thoughts ran from simply showing a few of his design objects floating around him to a completely cluttered environment. Then, in a great book on his work ("Industrial Design," Raymond Loewy, Overlook Press), I spotted a 1949 Time magazine cover that had a remarkably similar approach. Here was a portrait of Loewy framed by many of his industrial designs. For me, that meant discarding my concept. Like any artist I want to do something original. I want to go farther than someone has gone before with the subject. So I opened my mind to different directions.

"Then, a question came into my mind, 'How would Loewy design his own countenance?' He obviously liked certain curves and sharp angles. What if his face reflected these? I didn't want it to be too cartoony, but I suppose I was thinking in terms of a 'George Jetson' version of Loewy's face."

❷ **Sketching.** Back at his studio, Wiggins chose a clear black-and-white photograph of Loewy from the book. For initial sketching, he traced the face in the photo with pencil on tissue.

"I always start with pencil on paper, trying to come up with a specific idea that will be translated to the screen. Sometimes, if nothing happens with the pencil on paper, I go directly to the Macintosh," Wiggins said.

Progressive pencil sketches show increasing exaggeration of Loewy's features, building in the angles, fins and rings that were ever-present in his work. "With the pencil, I can 'see' where the work is going. I become more and more pleased with my self-assignment. I can see that it is a challenge and I am not going to able to coast through it. That pleases me."

❸ **The digitization.** Satisfied that he had found a creative direction for this work, Wiggins took the photo of Loewy to a local Krishna Copy Center, where he first photocopied the image from the book page, then digitized it with Krishna's Abaton flatbed scanner from Abaton Technology Corp. He used the scanning software's default settings and saved the images as a 72-dpi MacPaint file. The quality and format of the image just had to be basic. Wiggins' style is to use and manipulate the digitized image as a template over which he lays color and form rather than rely on the digitized image as an integral final element.

❹ **Distortion and outlining.** With the digitized image saved on a floppy disk, Wiggins took it back to his own Macintosh system. He opened the MacPaint image within the PixelPaint program.

Wiggins took full advantage of the Macintosh's ability to manipulate and distort a digital image. Using the basic tools of PixelPaint, he enlarged and stretched the image. Loewy's shoulders and body were outlined with simple line work, with the fill area deleted.

Next, using the program's skewing tool, Wiggins pulled the art into a forward slant. "I tilted Loewy to give that sense of forward motion he so often gave to his vehicular designs." (You can see these progressive angles in vintage Studebakers and Avantis designed by Loewy.)

With the distorted scanned photo on the screen in front of him and his pencil-sketched exaggerations at the side, Wiggins began to extend the one-color bit-mapped outline from the shoulder area into the face. So that he could see his new line work, he colored the base image a light gray and used black to outline. "At this point, I was concerned with maintaining a likeness and still being interpretive," Wiggins said. The facial features were filled as originally digitized while the line work in the hair, ear and neck remained open.

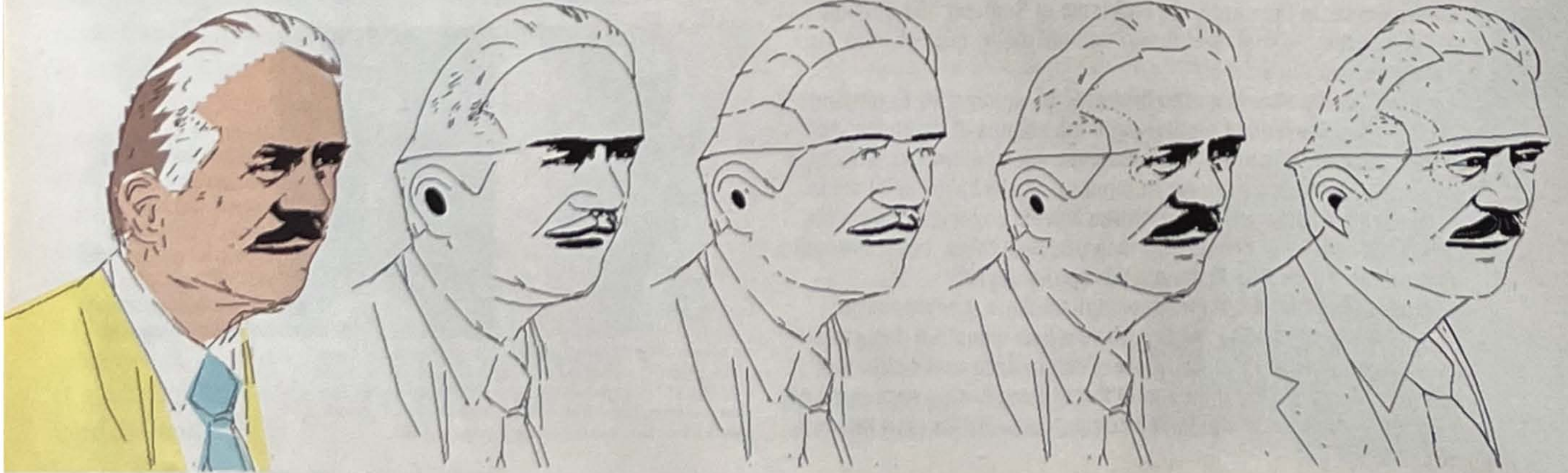
❺ **Looking for direction.** With the rudimentary portrait outline on screen, Wiggins was ready to venture into a focused creative direction.

"I laid in colors real quick just to see if any ideas popped up. Sometimes color can inspire a direction. In this work it didn't."

Wiggins ignored the color work and went back to the outline sketch. He experimented with changing the face and streamlining the facial features. At this point in the process, the work was very much subject to new directions and elements. New shapes, details and contours appeared on the screen as he

Continued on page 44

Then a question came into my mind, "How would Loewy design his own countenance?"



Wiggins experimented with color and style, seeking a direction for his illustration. He abandoned a cartoon-like style for a more natural look.

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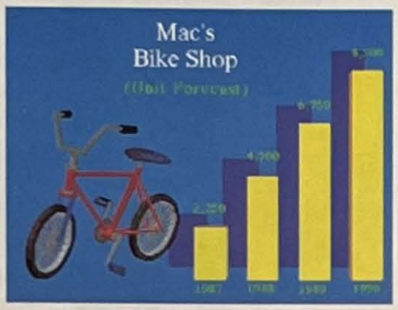

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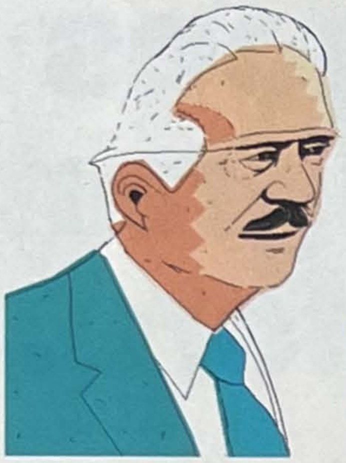
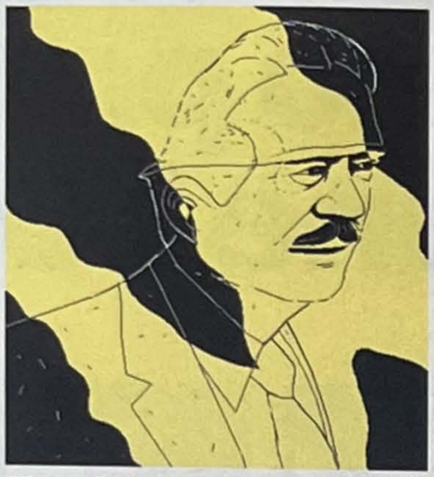
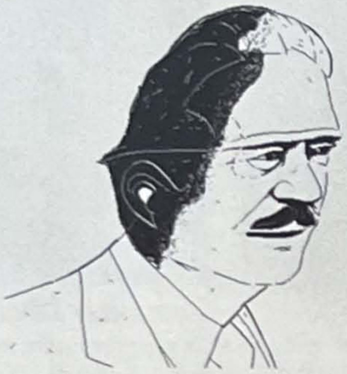


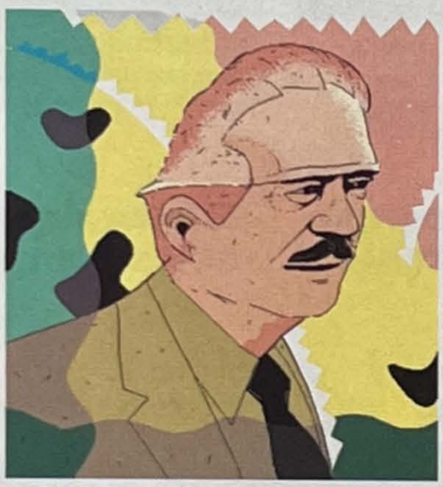
Color and shading experiments slowly lead to the final image.



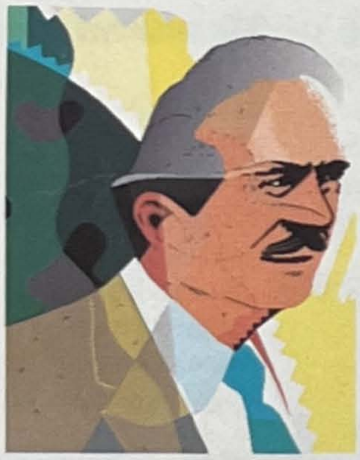
Wiggins dismissed these overlapping shapes as "too arbitrary."



Reversing part of the image led to another "dead end."



Wiggins worked next on establishing a background environment.



Further experiments with color and patterns.

The artist

How did the first creative caveman feel when presented with a piece of burnt wood and a cave wall? Illustrator Mick Wiggins may well have an insightful answer.

Schooled in the traditional fine arts with a flair for oil painting, Wiggins bumped into computer media through happenstance. Wiggins was an assistant art director at a computer magazine when the publisher geared up to produce the first Macintosh magazine. In preparation, Apple supplied the company with Macintoshes well before the January 1984 introduction. Wiggins was assigned to produced editorial illustrations with MacPaint as the first professional artist to create published work outside of Apple.

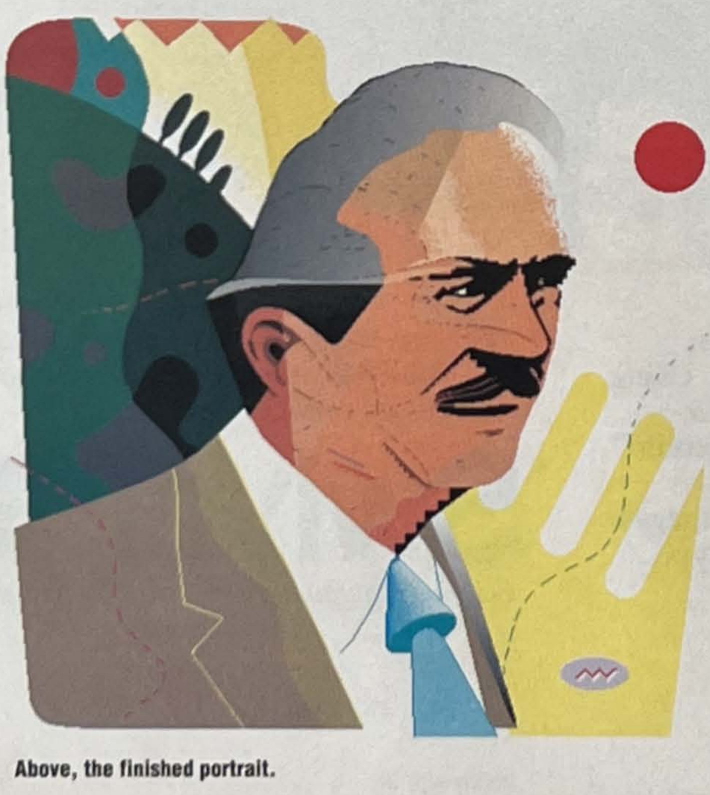
ED KASHI

Today, Mick Wiggins is an independent success as an illustrator, noted not only for his work for Macintosh publications, including MacWEEK, but also for Apple, Aldus and such non-computer clients as Connoisseur magazine. He works at a studio in his home perched on the side of a Berkeley, Calif., hill. — By Randall Kincaid

worked. New elements were added that weren't present in the photograph or the sketches but were suggested by Loewy's designs.

"With more experimentation, I was more dissatisfied with the direction. I realized that I was not interested in making a cartoon with only a passing resemblance to the subject," said Wiggins.

"So I returned to a more natural look, still trying to discover the flavor of the illustration. I tried further refinements in the face and in the shapes that his features suggest. My treatment of the face still didn't feel right to me." Working further, he added texture marks in the jacket, hair and face. The shoulder lines were extended and defined. Changes were made to the ear. Wiggins was not completely pleased with the hard edges and sharp definition of the eyes, nose and mouth, but he decided to let the line work stand as it was for the moment.



Above, the finished portrait.

❻ **Creative play.** At a place where he needed to refresh his thinking about the work, Wiggins again turned to the color palette of PixelPaint. Using the organized color families on the palette, he colored the face with three shades of flesh-toned color and the jacket and tie with shades of green. Wiggins again saw color experimentation as a dead end.

Next, Wiggins tried another exercise in creative playfulness. He selected the entire illustration and used the "invert" menu command to create a negative version of the screen, saving it as a separate file. He cut and pasted, mixing positive and negative versions of the art, creating wavy shapes of the divided areas. Yellow was painted in as a background contrast to the heavy black of the reverse areas.

"I knew I'd probably use some overlapping shapes, but this looked pointless. It was just too arbitrary, too contrived as a creative method," Wiggins said.

Not quite ready to abandon the resources of the negative version file, he tried again to incorporate part of it into the portrait. A portion of the negative file was placed over the back of the head. "Another try, another dead end," Wiggins said.

❼ **Pixel painting.** Wiggins again decided to turn to the full palette of PixelPaint. He now approached the portrait as a complete canvas, not just as a face. "I moved toward establishing the whole environment of the illustration." Irregular Loewy-inspired shapes were drawn and colored. Serrated shapes that often characterize Wiggins' Macintosh work appeared.

He returned to the facial area. Lines and shadows were made heavier for more contrast. Serrated edges were added to shadow lines and areas, again emphasizing Wiggins' singular style. Wiggins moved quickly, increasingly pleased with the direction of the work.

The special-effects tools of the program were brought in. Wiggins used brush patterns and gradient fills in the brow and hair.

Wiggins decided to simplify and refine the background to bring the subject forward. Some areas and shapes were deleted, others subordinated into similarly colored areas. Sharp angles were subtly included that were hidden through the use of closely related shades of color.

"I felt that I was getting closer to the final work." Wiggins began to lay in little details. Loewy's tie was transformed into two machined cones, one stacked atop the other. Here and there, a few lines were adjusted, moved, deleted and added.

"Now I wondered if there was a place for icons representing Loewy's work. After putting in the rough silhouette of the car, I decided against any specific icons. Still, I tried to make the background as 'Loewyesque' as possible. There are obvious things like rounded, 'modern' shapes, and him facing into an uncluttered, clean future."

The final touch to the portrait was Wiggins' addition of his own signature icon, the distinctive "MW" that states that the artist was content with his self-assigned portrait of another artist. □

Randall Kincaid wrote "IWYSWYW — Is what you see what you want? Typography and the Macintosh" in the May 17 GA Supplement.

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5 mice!

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Color pre-press on the desktop

BY ROBERT VIRKUS

> *A fully electronic color pre-press system can color correct and separate images, design and separate color graphics and support high-quality typography. How well does a Macintosh system do this? How well does the Mac link to high-end systems? Just what is the state of the art?*

The Macintosh II is shaking up the color pre-press industry. Manual labor and half-million-dollar machines have long been the only way to do color pre-press work. But the old ways are changing, faster than anyone imagined.

Color pre-press and the two industries it serves, advertising and publishing, are rethinking their methods of operation. In advertising, the distinction between design and production is being erased. In publishing, pre-press is becoming more an internal editorial management function than a production function completed out of house. In numerous instances, color pre-press tools are leaving the hands of the production department and falling into the hands of the artist, graphic designer and editor.

The impetus behind this change has been the merging of the computer graphics and graphic arts industries. The market shift to computer publishing that started with the original monochrome Macintosh and the LaserWriter is also happening in color with the Macintosh II. "The distinctions between art creation, design and production are fading away," said Bob Gaffney, creative director at Saatchi & Saatchi in New York.

The Macintosh II has made possible the creation of desktop color pre-press systems that electronically integrate color pre-press processes. The information needed — text, images, graphics and page geometry — is assembled electronically. A fully electronic color pre-press system can color correct and separate images, design and separate color graphics and spot color, and construct pages with all text in place while supporting high-quality typography. It can then automatically merge all these page elements together on the four separate films required for making the plates that run on the printing press.

Publishing has always had three distinct phases — creation, production and distribution — each requiring a number of manual processes by specially trained personnel. Pre-press now describes the work performed in the production phase after editorial and before printing. It includes the following elements:

- Line shots: high-contrast black and white images, with no shades in between. Type is processed as a line shot.
- Halftones: photos processed by using a halftone screen to produce a pattern of large and small dots representing shades of gray. (A printing press can print ink only at full intensity.)
- Color separations: four halftones of the same continuous-tone photograph. One prints in cyan, one in magenta, one in yellow and one in black.
- Stripping: an assembly procedure that traditionally includes the manual positioning of the different elements on the film.
- Proofs: both color proofs to check separation quality and page proofs to confirm that the pages are stripped properly.

The most modern publishing operations are hybrids of electronic pre-press and traditional methods. High-end electronic systems are used for separating and correcting color images, but mechanical stripping is still the primary method of color page composition.

The skills involved. Stripping is an assembly procedure. Film negatives, halftones, color separations and any other components must be positioned. This includes line shots of the paste-up and its overlays (masks created to allow certain colors to show or be blocked out); the assembly of the final cyan, magenta, yellow and black negatives; and the exposure of line shots and negatives to create the final composite (one-piece) film. Becoming a journeyman stripper skilled enough to perform complex stripping can take more than six years. Because of the skilled manual labor involved, pre-press costs have represented a large part of production costs.

Moving more completely into electronic pre-press has several advantages, including the reduction (and in some cases the elimination) of mechanical pre-press processes such as stripping and multiple film shots. Electronic stripping accuracy makes precise positioning possible. Graphic designers can now design in the same media used to produce the final output. Also, electronic files can be edited easily. A standard page template becomes a new page by "pouring" new page elements into it, and electronic color images can be edited in ways that are impossible through non-electronic methods.

Another major advantage of electronic pre-press is that PostScript files can be produced on relatively inexpensive Macs and printed on a variety of machines, ranging from low-cost laser printers at 300 dpi to high-resolution printers like Linotronic 300s at up to 2,540 dpi. And since they're ASCII-based, PostScript files can be moved through telecommunication channels for off-site film making and printing.

Macintosh software. Color pre-press from the desktop centers around two types of Mac software: image-enhancement software (for continuous-tone photographs) and page-integration software. A third group allows for the creation of four-color separations for graphic design elements like charts and illustrations. These include Adobe Illustrator 88, LaserWare's LaserPaint, PixelPaint from SuperMac, and Aldus FreeHand, which can be used to create the graphic elements as well. They provide only a preliminary step in the pre-press process because the film they produce still must be either stripped in at a pre-press house or placed with page-layout software.

A certain amount of mid-range gray-scale image enhancement is possible with a program like Letraset USA's ImageStudio or — for color enhancement — with a program like LaserPaint. High-end color image enhancement is not quite here yet for the Mac, though two software packages are coming to market. Avalon Development Group is releasing PhotoMac this fall. PhotoMac provides full-color image editing of 24-bit images, using

A black-and-white Quark XPress page, printed before art is placed.

A color XPress page, with low-resolution images provided by CyberChrome.

A second XPress page; low-resolution images have been rearranged and resized.

either a 24-bit video board or a standard eight-bit card. It offers color correction of all or part of a picture, using three color systems: RGB (red, green, blue), LHS (luminance, hue, saturation), or CMYK (cyan, magenta, yellow, black). The finished image can be color separated or imported into Quark XPress 2.0 either directly through cut and paste or as TIFF-24 files.

The other package is SpectreMatch I for the Mac, color-enhancement software from Pre-Press Technologies Inc., which should be available by press time. Using a 100-to-300-dpi scanner, TARGA images are brought in, corrected and output in TARGA format. SpectreMatch's controls are the same as those of a high-end laser drum scanner, letting the artist adjust range, graduation and color by manipulating the yellow, magenta and cyan printers. It then passes the corrected images to SpectrePrint I for conversion to PostScript files for color separations. Output can either be four-color PostScript files, each representing a CMYK value, or four-color encapsulated PostScript format files (EPS) or Tag Image File Format (TIFF) files, which can be imported into a desktop publishing page-layout program.

The major players for color pre-press page integration are the two known for desktop publishing: PageMaker from Aldus Corp. and Quark XPress from Quark Inc. With the recent release of 2.0, Quark XPress definitely leaps ahead in this market. Quark XPress 2.0 will allow four-color process-color separations to be prepared from text that contains spot-color elements, lines, frames and boxes prepared in XPress and from EPS graphics created with Illustrator 88.

PageMaker 3.0 has several drawbacks. While allowing spot color on page layouts, it does not have the same built-in color sophistication as XPress. In addition, its positioning capabilities are limited. The degree of accuracy needed for positioning elements on a page within .001 of a point is possible with Quark XPress but simply cannot be achieved with PageMaker. "[In PageMaker] aligning a hairline rule centered on the gutter to the cap height of the first line of text is only as accurate as can be seen on the display," said Larry Spevak, president of Compatible Systems Engineering Inc. (CSE). According to an Aldus representative, there is little market demand for numeric positioning, and the company has no plans to offer it in the near future.

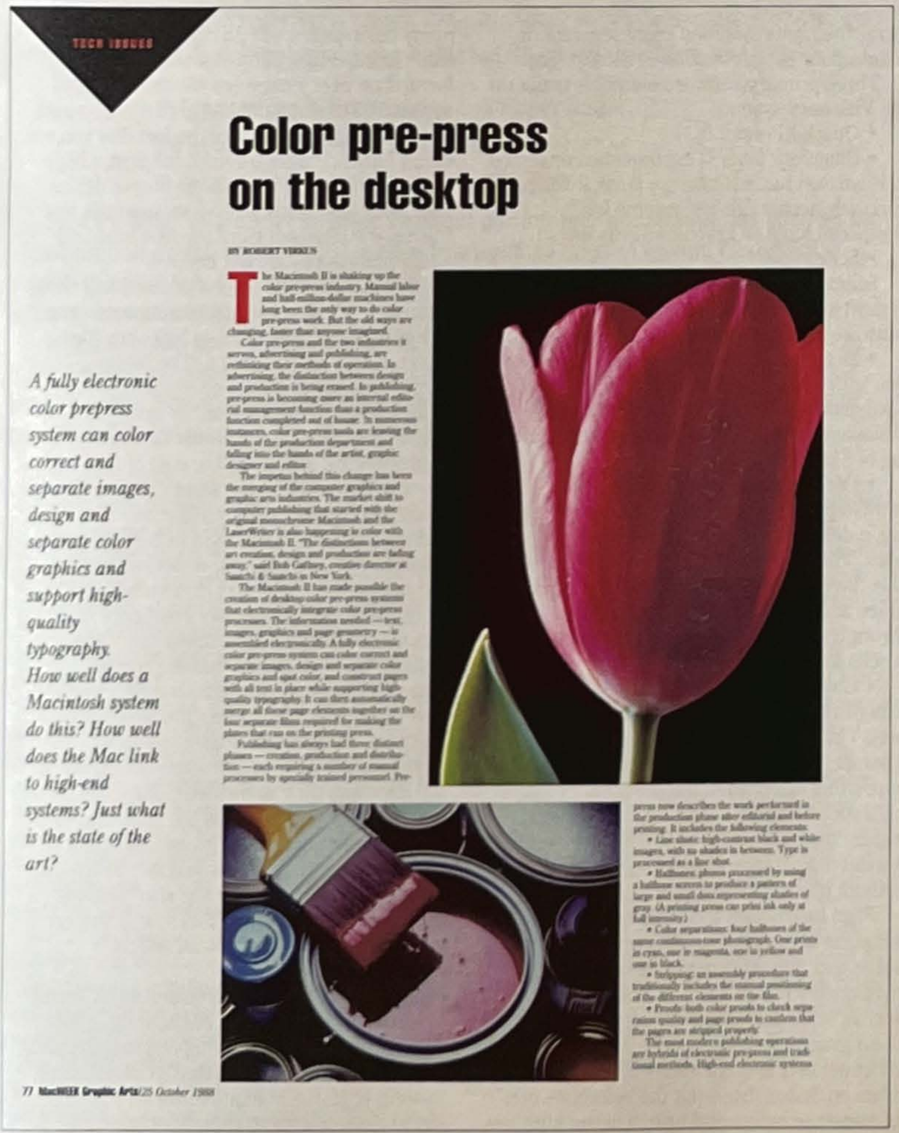
Integrating the desktop with the high-end. Three companies, Scitex, Crosfield and CyberChrome, have announced color pre-press systems that are integrated with the desktop. They operate in similar ways.

- Continuous-tone images are scanned in-house or sent to the service bureau for scanning. (Low-resolution in-house scanning still needs to be supplemented by high-resolution scanning at the bureau.)
- A low-resolution version of the image, usually black and white, is returned in a format that a page-layout program can access.
- The page is designed and images are moved, cropped or scaled as desired.
- The entire page file with all elements in position is returned to the service bureau, where the low-resolution version of the image is automatically replaced by a high-resolution version (up to a 36-bit color file).
- The file is electronically separated, output on an imagesetter and a color proof made.
- Four color-separated, plate-ready films and a composite color proof are returned from the pre-press house.

Although all three desktop-to-high-end systems operate similarly, there are significant differences, particularly in the degree of proprietary hardware and software involved.

At the Seybold Seminars in March, Scitex announced Scitex's Visionary, a software system for designing pages on the Mac. Visionary information can be sent to Scitex's Gateway, an imaging workstation that converts the electronic layout containing text, graphics and

Continued on next page



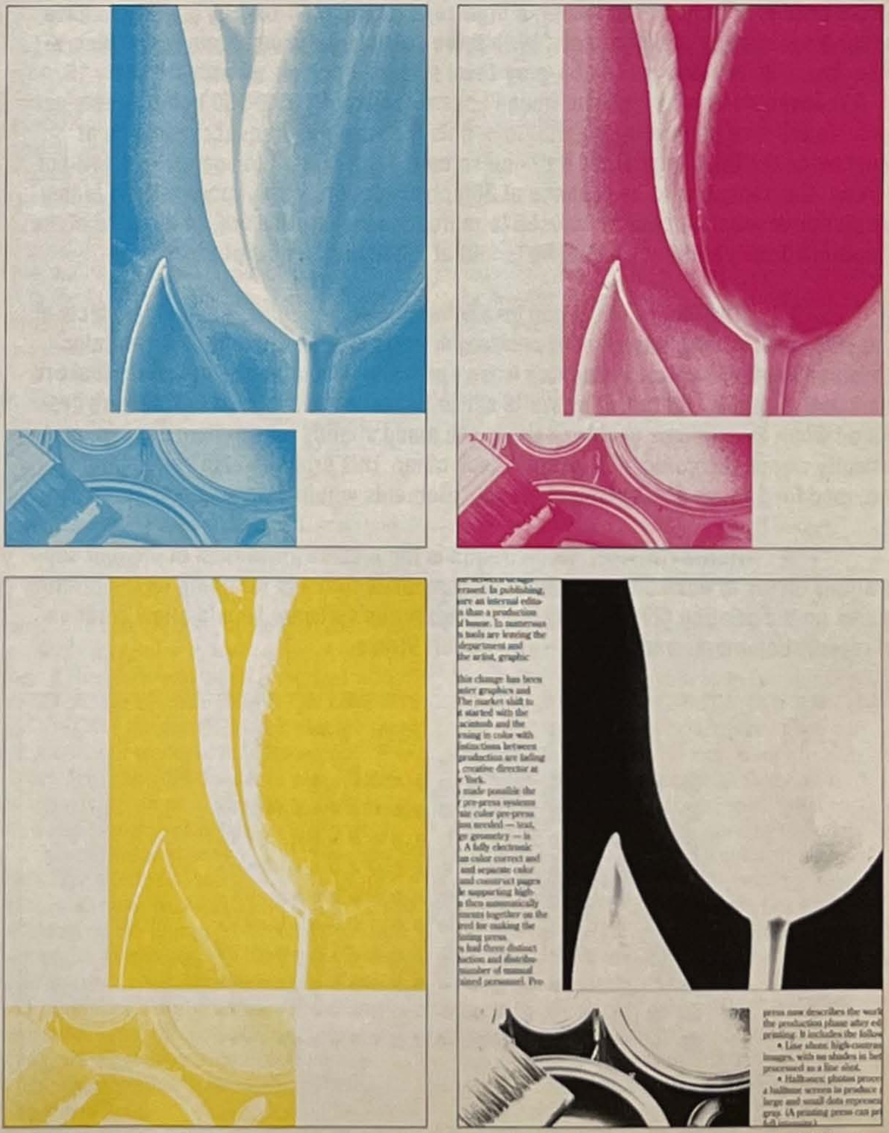
TECH ISSUES

Color pre-press on the desktop

A fully electronic color prepress system can color correct and separate images, design and separate color graphics and support high-quality typography. How well does a Macintosh system do this? How well does the Mac link to high-end systems? Just what is the state of the art?

77 MacWEEK Graphic Arts/25 October 1988

The Xpress page file is sent to Typesetting Service Corp./Sprintout; high resolution versions of the CyberChrome photos replace the low-resolution images on the final page.



At Sprintout, the file is electronically color separated into cyan, magenta, yellow and black; four plate ready films and a composite color proof are returned from the service bureau.

Color: Technical considerations

When you consider that printing presses use only four colors of ink and must mix them together to make all other colors, it's amazing that they are able to reproduce color as well as they do. However, presses simply cannot reproduce some colors. The factors affecting color-reproduction quality escalate in complexity as you attempt to more nearly match the original photograph.

Full-color printing requires four halftone screens of the same photo. One halftone prints in cyan ink, one in magenta, one in yellow and one in black. Separating color involves getting the right values into these four process colors. Since inks are not perfect, film shows color differently than paper, paper absorbs ink at different rates, presses apply ink differently and on and on; the task is not easy. The ability to do quality separations involves controlling some of these factors and includes a number of technical issues such as screen angles, dot densities, traps and registration.

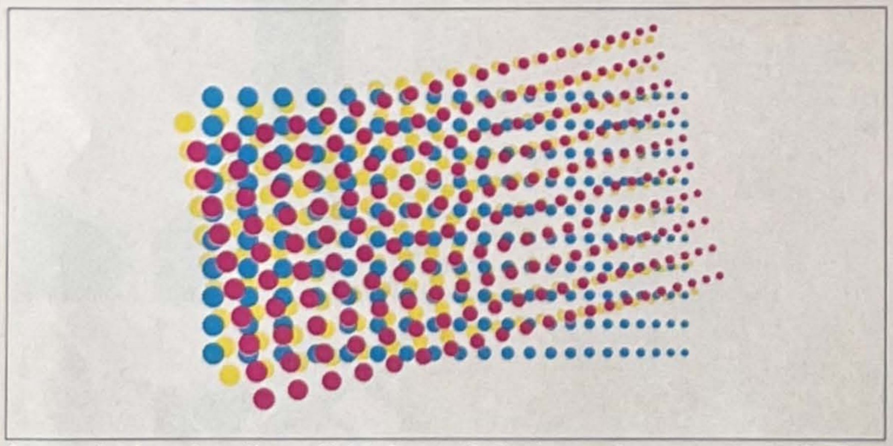
SCREEN ANGLES. Each halftone screen must be rotated at a slightly different angle. When the four process colors print in the same place (which is what will make them look like a photo), the orientation of the dots in each colored ink must not coincide, or unwanted effects will show on the printed piece. Imprecise rotation values for any screen result in a moiré pattern. Rotation values for each screen are typically 105, 75, 90 and 45 for cyan, magenta, yellow and black, respectively. Color separation software should allow rotation of each individual layer by single-degree increments to allow precise adjustment of values.

DOT DENSITIES. Conventional halftones are created by placing a screen on the photo and breaking the continuous-tone image into a dot pattern. Computer halftones create an image from digitized data a dot at a time. Each halftone dot is an array of digital dots that are either on or off, causing the optical illusion of different shades of gray. For example, a digitizer that captures 16 gray levels will have a four-by-four array of digital dots. With three dots on, a darker shade would be created than with two dots on. A 256-gray-level system will have an array of 16 by 16.

A reasonable-quality halftone image uses a screen of 110 to 150 halftone dots per inch. To produce good computer halftone dots the scanning frequency must be at least twice the frequency of the halftone screen. For a printed image using a 150-dot screen, the photo has to be scanned at 300 pixels per inch. The imagesetter's high-resolution mode may have to be used to reproduce the information. In the case of the Linotronic L300, halftones would be output at 2,540 digital dots per inch.

TRAPS. Trapping can be another technical pitfall. To see the effects of trapping, pick up any magazine or newspaper and examine areas where one color ends and another begins. If trapping wasn't properly accounted for in the original artwork and stripping, there will be white space between the two colors. Traps are produced when the outlines of color objects are made slightly thicker than needed, specifically where two colors butt against each other. This problem also demonstrates the need for precise positioning of graphic elements within a page layout program.

REGISTRATION. Registration is the precise placement of the four separations on top of each other for shooting composite film and for lining up the printing plates on the printing press. Again, color separation software should allow creation of registration marks and labels. — By Robert Virkus



LASLO VESPREMI

An example of a moire pattern, which is the result of an incorrect screen angle combination. This can be fixed by altering the screen angles.

Visionary design workstations link with Scitex Response systems via modem; they incorporate Quark Xpress, Bitstream fonts and proprietary Scitex software tools.

Continued from previous page

page geometry into an "electronic mechanical" that can be output on the Scitex Response color pre-press system. The Scitex system performs the high-resolution color separations required for the production of color pages.

Three primary software elements make up the Visionary system:

- Quark XPress 2.0.
- Bitstream fonts (Text must be converted to Bitstream Inc.'s Bitstream fonts; it will not currently accept Adobe Systems Inc.'s PostScript fonts or graphics file formats.).
- Scitex tools.

Scitex markets the desktop-to-high-end system in three basic hardware and software configurations:

- Design Station. A Macintosh II workstation with 4 Mbytes of memory, an 80-Mbyte hard disk, a 19-inch color monitor and the Visionary software. This package has a price tag of $13,600.
- Primary Design Station. The Mac II workstation above, a thermal printer for proofing, a desktop scanner and Visionary software. The Primary Design Station sits alongside the Gateway system or in the publisher's office and uses serial communications through a high-speed modem to the Gateway. It sells for $31,000.
- Gateway. The Mac II workstation, EtherTalk LAN (the system runs on Ethernet), Visionary software, 150 Bitstream fonts, a parallel interface to the Scitex Response system, a thermal printer, a color scanner and a high-speed modem. The Gateway system, which costs $80,000, is meant for the service bureau that already has the high-end Scitex system; it is hard-wired to it.

Page instruction files with text are transmitted as line work; in other words, as art and not as text. Images are scanned in at a reference quality of 300 dpi. The Scitex service bureau scans the images at a high resolution. Color graphics, scaling and color-correction information is also transmitted, and an algorithm on Scitex drops out the reference continuous-tone image and brings in the high-resolution version.

Ned Boudreay, promotions manager of Scitex America, calls the Visionary system "the most elegant solution at this time for bridging the gap between design and production." By providing a complete page-instruction file, many basic pages will go right to film, and the same manual functions that used to be performed on every page are mirrored by the system. "Without a doubt, there will be a cost savings, if only because of the fact that you are doing only one pass through the Scitex high-end system, using it just as an output device," Boudreay said. This, of course, assumes that the color comes out right the first time and additional passes are not needed.

The cost savings from Visionary will come entirely from up-front production, according to Roy Luckett, president of NEC Inc., the beta-test site for Visionary. "I've told my clients that they will not necessarily save money using NEC's Visionary system. Since Scitex has three to four times the hourly rate of mechanical stripping, the cost of four-color process films will be the same. They will save money with fewer author's alterations, reduced paste-up labor, and with fewer page changes because editors, writers and artists see pages in color before they come to us."

What about the Display PostScript link announced at the same time as the Visionary system? Boudreay said that the compatibility between Display PostScript and Scitex will be developed. But, he added, "the shape of that and what it will entail is only known by the guys in R&D." He said he does not expect to see it at "any time in the near future." According to Luckett, who is also the chairman of the Scitex Users Group, the group has sent a message to Scitex that they would like to see the tie-in to PostScript. They are also "pushing to have fonts relate to the L300 so that screen faces, Scitex and the L300 all match."

Lightspeed. Crosfield Electronics Ltd. joined the Macintosh pre-press community in July with the purchase of Lightspeed Inc. Crosfield plans to integrate Lightspeed's Color Layout System (CLS), a Macintosh II-based professional design station, with its existing PC-based system, Synervision I. It will then trans-

Continued on next page

Big savings with desktop systems

USING CLS, Crosfield estimates the up-front savings of using its system, with a sample project of a standard page for a children's clothing ad. The cost breakdown, by Lightspeed's estimates, is:

	Traditional	CLS
Time	13 hours	6 hours
Labor	$650	$300
Materials	$335	$43 (client proofs)
Equipment	—	$36 (amortized)
Total	$985	$379

This shows an up-front time savings of seven hours and a cost savings of $606.

USING A MINICOMPUTER-BASED editorial and production system, such as the Atex System, for prepress, a typical tabloid publication will average:

- **Typesetting: $80 per page;**
- **Prepress: $175 per page.**

50 editorial pages for 50 issues:

- **Typesetting: $200,000;**
- **Prepress: $437,500;**
- **Total: $637,500.**

ON A MACINTOSH with a program such as Quark XPress 2.0, all elements are placed on the page and you output plate-ready film from an L300.

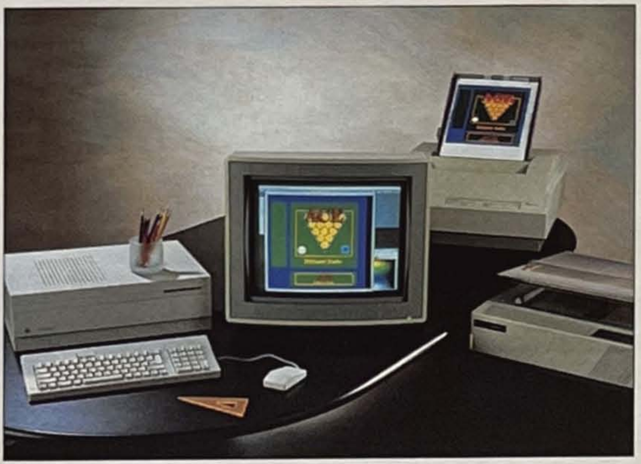
- **Typesetting & Prepress: $15 per page;**

50 editorial pages for 50 issues:

- **Total: $37,500**

That's a $600,000 direct savings (without getting into the intangibles such as the added time in-house to do layout, or the front-end savings of having LaserWriter output for proofing). I've seen magazines that double their typesetting costs on authors' alterations alone.

When desktop scanning reaches the level of magazine quality — and it will — these figures will take another jump. At an average cost of $150 per separation, if you use four-color on only 25 of your pages, the total cost will be $3,750 per issue, and $225,000 for the year. — By Robert Virkus



The Lightspeed Color Layout System, composed of a Mac II, color flat-bed scanner, thermal transfer printer and design software, starts at about $40,000.

Crosfield plans to transmit designs from the newly acquired Lightspeed Color Layout System to its high-end pre-press equipment, the Studio 800 line.

Continued from previous page

mit CLS designs to its high-end pre-press equipment, the Studio 800 line. Nick Hadden, vice president of marketing at Crosfield Lightspeed Inc., called this a "major move into design that indicates the emerging interest within the pre-press industry in computer design."

Lightspeed's target market has been in-house corporate art departments, advertising agencies and pre-press service companies that use CLS to develop ideas for advertisements, magazine illustration and other graphic images. According to Hadden, Lightspeed is "for the professional designer. We are not after the desktop link. The system as a graphics design tool is its justification, not its link."

With CLS, essential information like page geometry, text and fonts are transferred directly, without additional work, to a high-resolution page-layout system. "Lightspeed will go out to all major pre-press systems. Links to Scitex, Hell (another high-end system) and Crosfield will be shipping in a few weeks," Hadden said. Photographs, scanned at 300 dpi for layout, are then rescanned at higher resolution for final production.

A Lightspeed CLS system is composed of a Mac II, color flatbed scanner, thermal transfer printer and design software, and starts at about $40,000. Studio 800 systems, including multiple high-resolution monitors, hard disk storage and advanced image-editing software, start at about $500,000.

Crosfield has also promised to provide support for PostScript, as well as compatibility of the company's page-layout and design systems with the file formats of leading Mac desktop publishing packages. According to Hadden, Version 2.0 of the CLS software, due this fall, "will provide PostScript output and will be able to accept PostScript files of all types." CLS will also "have greater text controls, such as kerning, page-to-page links and run around," said Hadden.

Hadden also said that you "can justify the system with hard dollar savings." But more than that, Hadden said, "is the increased time that a graphic designer can spend in creative work. And that may make the difference in which media is chosen by advertisers as print becomes much more attractive."

CyberChrome. Although not a major name in the pre-press business, CyberPublishing has developed desktop color-separation software for Linotronic service bureaus. It's being sold as part of an $80,000 turnkey system that will enable a service bureau to create four-color separations of TARGA and TIFF color images created on or scanned into a Macintosh.

Called CyberChrome, it was developed as a production tool for CyberPublishing's catalogs, using as many off-the-shelf components as possible. The service bureau's software runs under MS-DOS, handles file conversion from the Mac and uses a standard TARGA board for digitizing and displaying the images on the screen.

Using CyberPublishing's system, the merging of color images with text in a layout program like PageMaker or XPress requires CyberMerge, a $495 utility. CyberMerge prepares TIFF or PICT versions of scanned color-image files. These low-resolution monochrome versions are used to crop, scale and position the image on the page. Editing changes on the low-resolution file are then translated to the source file before it is separated. The four versions of the image are electronically merged with four copies of each page. (The black separation is merged with black text, the other three with spot color text and the CMY images.) The four files are then output on four pieces of film. In essence, CyberMerge enables the Targa user to prepare the image or page files for separation by the CyberChrome-equipped service bureau.

CyberChrome is designed to be integrated with XPress 2.0 and PageMaker 3.0. Using XPress, all color page components can be consolidated on the four-process color films for output to a Linotronic 300: black and color text, and spot color separations from XPress or PageMaker; color graphics with spot-color separations from Illustrator 88; graphics with spot color separation from FreeHand; and color-separated images from the CyberChrome system.

Full integration of all page components in separated process color, without any mechanical processes, is also possible. Matt Kupitsky, vice president of CyberPublishing, said that "desktop pre-press cannot be judged on separations alone. You must be able to integrate text and graphics. That's why we are PostScript all the way through."

McGraw-Hill's Aviation Week & Space Technology market supplement program of New York City has been using the CyberChrome system since the beginning of the year. Peter Karnig, director of special advertising programs, said he is sitting on "a gold mine, but nobody understands what we're doing. It's too revolutionary."

The market supplements average 32 pages with 20 edit-affected pages, most with four-color photos. "The difference in pre-press between the old way and CyberChrome is $20,000 vs. $2,500, and we do it faster," said Karnig. "With a later closing, we are also able to keep open for advertising much longer."

So far, only one service bureau has the CyberChrome system: Typesetting Service Corp. of Providence, R.I. Bob Schaffel, who is in charge of technical support and training for Typesetting Service, said most of his clients report that they are saving up to two-thirds of their pre-press costs. "CyberChrome scans are not yet at the quality of Scitex, but we are not targeting that market. We have a very healthy start on the side of the industry that doesn't require such high quality," he said. What you have with CyberChrome, according to Schaffel, is "a good newspaper system with newspaper quality at half the cost. There will always be a market for Rolls-Royce color, but while some of the work that goes into those systems does not really need to, there was no choice but to use the high-end machines."

Schaffel came to Typesetting Services from the color pre-press world, and he said that after spending considerable time fussing with the color quality from CyberChrome he's learned to leave it alone. "It's pretty well-balanced as it is. Not too much correction is needed." CyberChrome is now working with

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36-bit scanners and, according to Kupitsky, "the results look pretty good and definitely of commercial grade."

Other major players. Other players in the color pre-press market include Compatible Systems Engineering Inc. and Unda Inc. CSE announced the development of a link between Macs and the minicomputer-based Atex publishing system used by most major publishers, including Time, Newsweek, McGraw-Hill, Ziff-Davis and The New York Times. CSE already has a PC-based product, PageSpec, that links Atex to Scitex and Crosfield systems. It runs on Novell Netware, and Apple has asked CSE to develop a Mac version.

"We are writing a text editor that runs on the Mac that will be transparent to Atex. Text files will be hyphenated and justified on the Atex system and returned to the Mac screen. Apple has been a tremendous help in getting this project started. Our second stage is to port PageSpec to the Mac," said Larry Spevak, CSE's president.

Spevak said he sees his network as a production department system and not as an art department system, contrary to a Mac-based approach. "So far, none of our networks are in the art department," he said. His position is that the art department needs to decide on the look and feel of the page without being restricted by the needs of how to make it work from the standpoint of typography and production. "The artist does not want to place captions to the degree of accuracy that is really necessary. That's the function of the production person," said Spevak. PageSpec templates will handle some of the positioning, but final placement will be the responsibility of the production department.

CSE also plans to develop an interface into its PageSpec production tool to be used as a comping tool for XPress. Since CSE already has a Scitex Handshake link, "if Quark writes a generic Handshake interface, then we have the link," Spevak said.

The second company, Unda, announced in July that it is developing a link that will allow Mac users to send graphics and text information to the Unda Color Design and Production System. Based on a Sun workstation, Unda can create composites and four-color separations on a L300. The interface will allow Mac users to send color images stored as EPS or PICT2 files to the Unda system. Text may be transferred in Microsoft Word format or as ASCII files.

The limits of desktop pre-press. Can we really say that electronic color pre-press is here? Are publishers going to be rushing to this new technology? We've obviously come a lot further, a lot faster, than anyone envisioned even a year ago. But we're not home free yet.

The hybrid method of setting type on the Mac and conventional stripping for images will probably remain and be cost-effective for some time to come, according to Steve Jewett, vice president of CGI Inc. of Boston, one of the largest pre-press houses in the country. "There are so many pages in this industry that I don't see any real change any time soon," Jewett said. "When we had one Scitex a couple of years ago, we had six strippers. Now we have four Scitexes and 45 strippers. The only real change is that we're producing more color pages faster than ever and for fewer dollars per page."

Electronic color pre-press would work, but it may not be cost-effective considering how slow the L300 is," Jewett said. "A much more capable RIP has to be developed. One page could take an hour to output all four colors in place. It might be cheaper to strip. And remember, you're in the stripping room anyway with supplied ads, which take up the biggest chunk of time."

Electronic color pre-press has been on its way since desktop publishing got its start. While not threatening traditional pre-press during this period, it has created a large user base that is oriented toward an electronic way of doing things. Users are ready for this new technology and are computer-literate enough to implement it. All signs point to desktop publishing making ever greater inroads as the capabilities of desktop publishing software improves to meet the needs of professional publishers. The recent availability of low-cost scanners for color images, XPress 2.0 for typography and page layout, Illustrator 88 for color graphics, and the Scitex, Crosfield and CyberChrome software integration indicate that commercial-quality color publishing from the desktop may soon be a reality. As PhotoMac developer Rudolph E. Burger, president of Avalon Development Group, said: "Color is the final frontier." ☐

Robert Virkus is senior partner of the Media Publishing Group, an electronic-publishing consulting firm based in New York.

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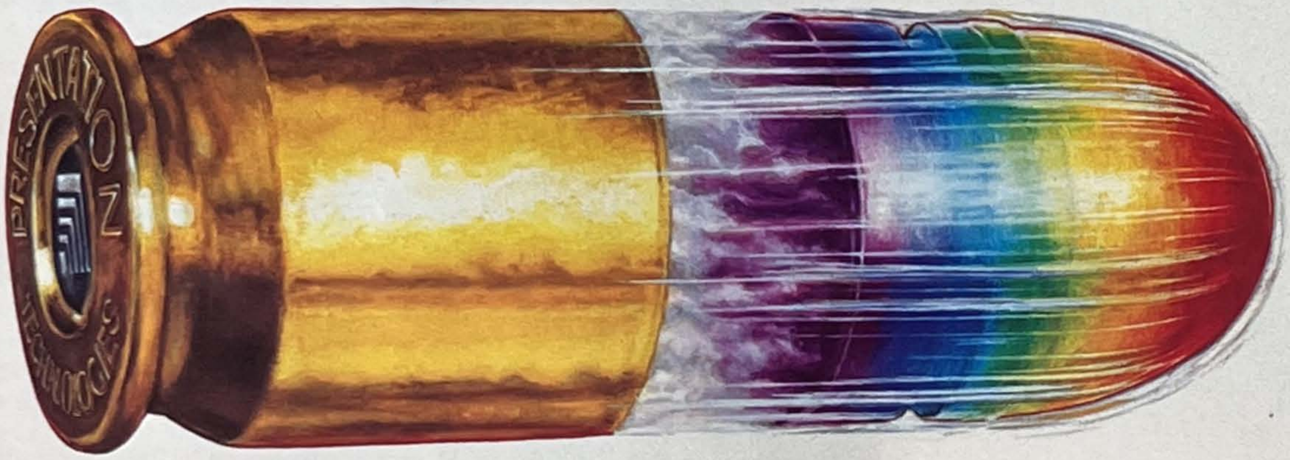

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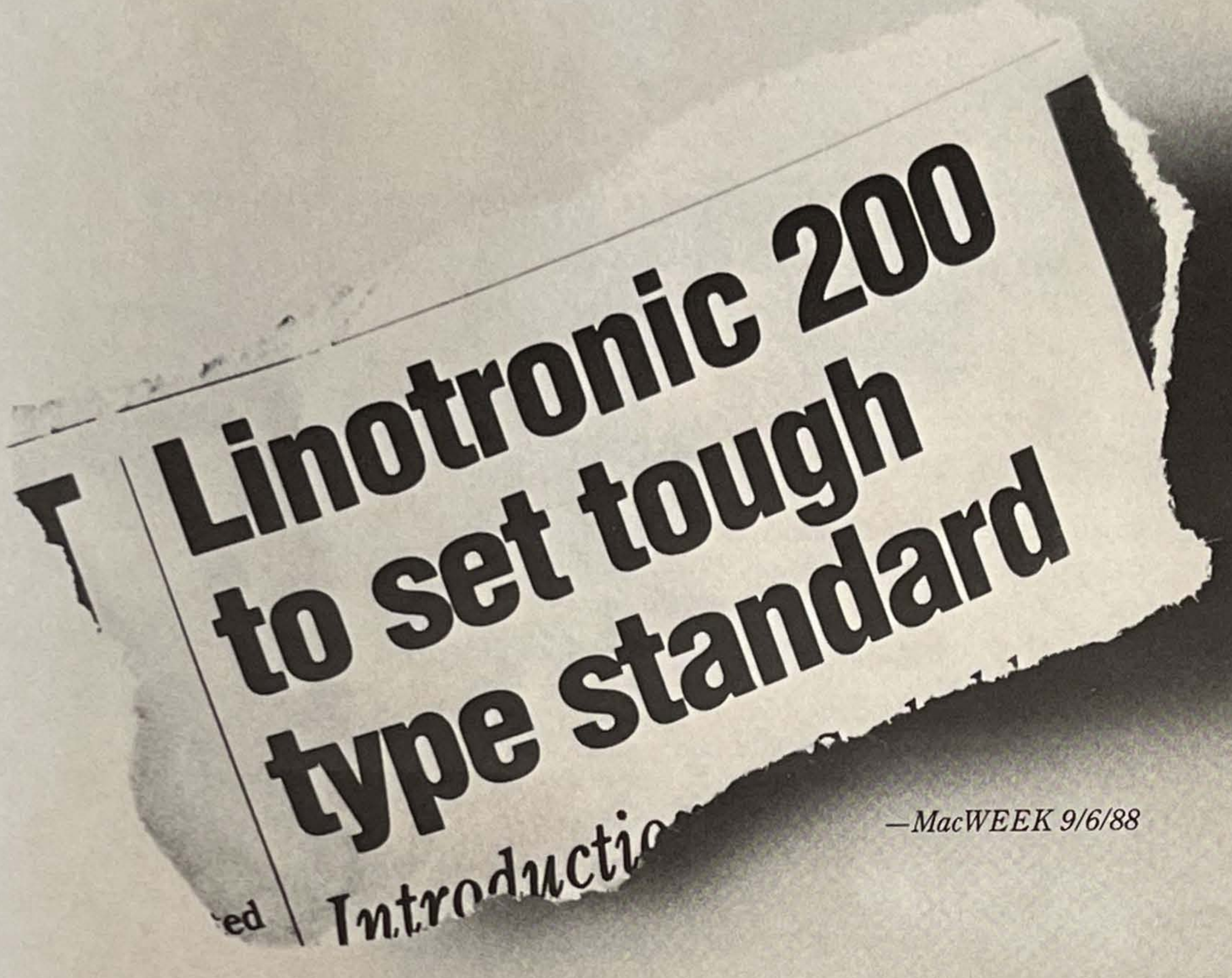

Linotronic 200 to set tough type standard

Introductio

—*MacWEEK 9/6/88*

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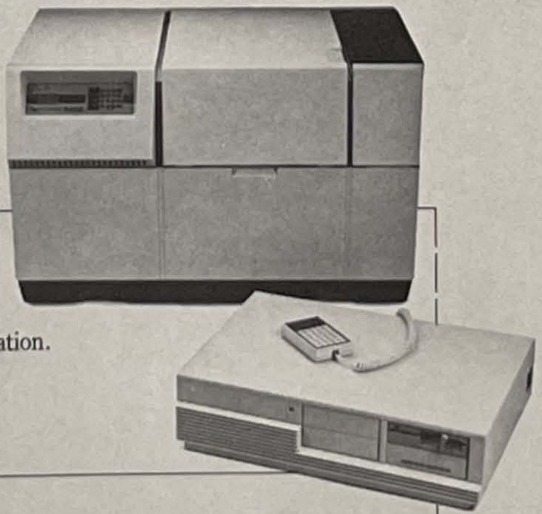

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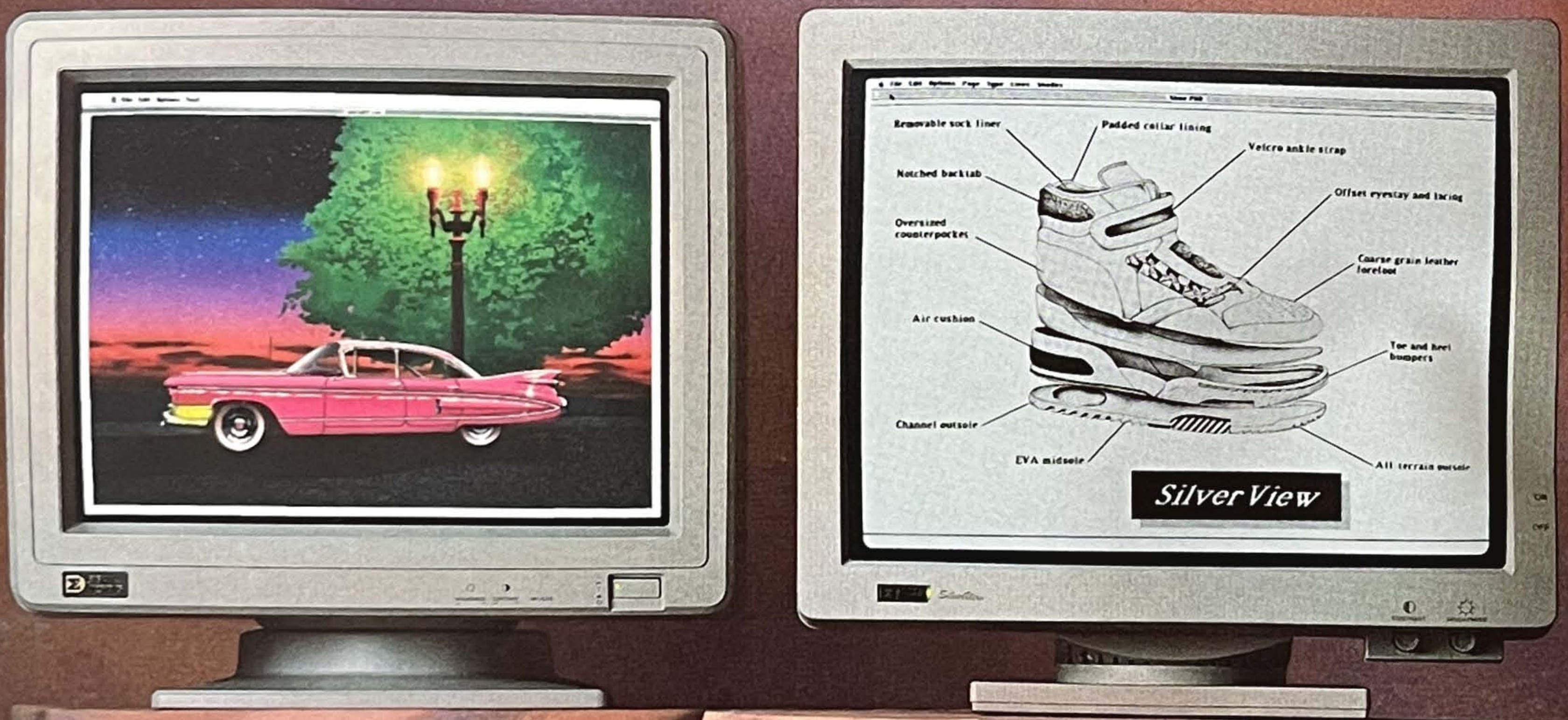

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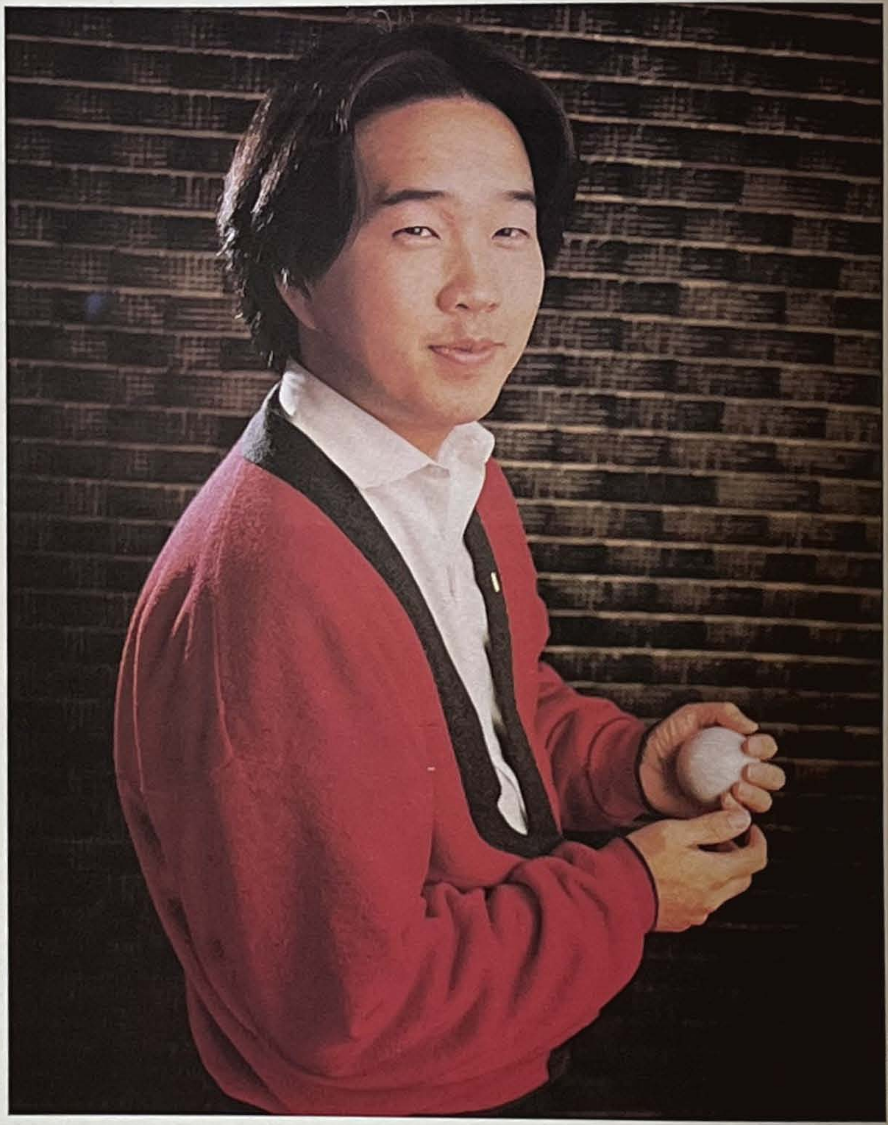
Clement Mok: A master of Macintosh design

BY KAREN SORENSEN


JOHN HARDING

A bustling madness descended on the designers as the deadline for Apple's 1987 annual report drew near. Clement Mok, Apple's young creative director, was making numerous last-minute adjustments at the photo session.

Finally, all of the elements of the photograph seemed to be in place: Apple computers, Apple printers, Apple disk drives, Apple everything. The colorful monitors glowed amid misty, gray surroundings. It was a beautiful, striking arrangement, and yet something was still missing.

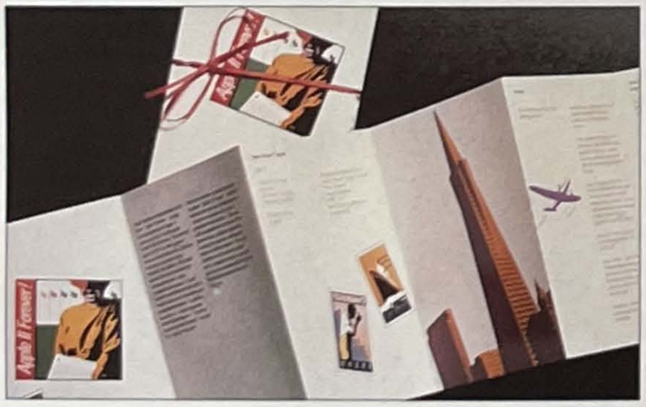
An impish smile appeared on Mok's face as he related the story from his San Francisco design studio. "The photo was too cold; it felt like '1984' with all these monitors all over the place. The beautiful screens just weren't doing the trick." Mok sat up straight in his chair, his enthusiasm rising, as he flipped open the large, fold-out photo in the annual report and points to his solution. There, a barely noticeable lizard crawled across the floor in front of a Macintosh SE.

"Everyone scrutinized this photo," he said, laughing. "It went before (Apple CEO) John Sculley and many other Apple executives for approval, but no one spotted what shouldn't have been there until after it was printed. People loved it. They loved the fact that we could do something like that within a corporation."

The story reveals Mok's obsession with the unusual — a characteristic friends say has greatly contributed to the graphic designer's phenomenal success.

"When Clement puts a lizard in a picture, he does it because he knows it will jog you," said Ellen Romano, a designer who worked with Mok at Apple. "He understands the impact it will have. When you see something new and unexpected, you remember it."

Below, brochure materials for the Apple IIc,designed by Mok. At bottom, Mok's design marks packaging and marketing materials in Apple's traveling museum.



At 30 years of age, the dark-haired, whimsical Mok is among the top designers in his field. His youthful appearance has led at least one friend to jokingly dub him "the most famous 12-year-old designer in America." Indeed, Mok has won more than 60 national and international graphic arts awards. Thousands of Mac users see a sample of his work every time they turn on their machine and the Picasso-like Mac logo flashes on the screen.

As a member of the original Macintosh graphics team, Mok helped create the well-known illustration that spread from the initial product packaging to the Mac computer interface to sweatshirts and beach towels. Using the Mac, he also condensed and redesigned the MacPaint user's manual, a simple, frequently copied booklet with a strong emphasis on graphics. More recently, he worked on the first HyperCard brochure, as well as Apple's first HyperCard-based annual report.

Today, after five years at Apple, Mok has taken his independence to its logical outcome and has established his own company, Clement Mok Designs, a communication design agency specializing in high-tech packaging and marketing materials. The hours are long and the pace is grueling, but after just seven months, "the volume is there," he said. His list of clients includes companies like Farallon Computing, Claris Corp., Connect Inc. and, not surprisingly, Apple.

Among graphic designers Mok is known as a high-tech wizard — the man who can bridge the left brain to the right brain and the artist who understands the propeller heads. The reason: he not only creates graphic designs for computer products, he creates graphic designs with computer products.

His small, brightly lit studio is filled with Macs and a group of young artists eager to use high-tech innovations. An average day might find them huddled around a Mac II, testing the sound and animation track for a computerized press kit, or skillfully maneuvering a mouse to create a new company image.

"In the design world there is a real phobia about technology," said David Meckel, vice president of the San Francisco chapter of the American Institute for Graphic Arts (AIGA), an organization Mok is active with. "The common perception is technology is for the pocket protector guys and computer nerds, not for artists. The interesting thing about Clement is he has a foot in both worlds."

Mok and his crew use a host of software, including drawing programs like Adobe Illustrator and Aldus Corp.'s FreeHand, and Apple's HyperCard. Clement Mok Designs was the creator of a HyperCard-based press kit distributed by Apple at the Macworld Expo this past August.

Mok's knowledge of computers sometimes enables him to assist clients at the marketing level with product positioning. "Understanding the technology really helps," he said.

Earlier this year, Mok completely redesigned the product packaging and promotion materials for MacNet, an on-line network from Connect Inc. In addition to the printed material, Connect received a HyperCard demo for the company to distribute to potential customers.

Mok hasn't always been fascinated with computers. Ten years ago, high technology was far from his life and vision of graphic design. Raised in Vancouver, British Columbia, he showed an early talent in art that won him a graphic arts scholarship to the University of British Columbia and later led him to the well-known Art Center College of Design in Pasadena, Calif. There he was taught conventional methods of design and illustration with an emphasis on packaging.

At age 21 he landed his first job, at CBS in New York, where he designed the CBS Sports logo. But he soon grew unhappy with the heavy hand of art directors. "I was young and arrogant," he said. "No one was going to tell me what to do."

Mok left CBS after six months and was hired as a designer at Donovan and Green, a New York firm he describes as "a hybrid of an ad agency and a design studio." Although happy with his position, Mok was still using traditional, manual methods of design, but he was becoming aware of the potential of computer-generated graphics.

"I was beginning to see some amazing computer technology. Products like the Hell scanner were becoming available, and I was influenced by a host of wonderful things like the special effects of Industrial Light & Magic and the movie 'Tron.' "

Late in 1982 Mok was hired as an illustrator at Apple. "I had no idea what the Mac was. It was just another computer. But I thought, 'What better way to learn about computers than to work for a computer company?' " But after a frustrating first year, Mok was ready to move on. Once again, he had been art directed too much, this time by Steve Jobs.

Ellen Romano, who now heads her own design firm in San Jose, Calif., worked under Mok as a junior designer on the Mac graphics team. "Once every two weeks we developed an entirely new look for the Mac material and presented it to Steve on a big circular table," she said. "We'd set up all these comps, and he would walk around the table and say 'Nothing really hits me here. Try again.'

"This went on for six months. We kept banging our heads against the wall, but Steve was so picky. He wanted to make a big statement with the Mac, but he didn't know what that statement should be. He'd just say, 'You're the designer. I'll know it when I see it.' "

"I was furious," Mok said. "We went through 15 rounds of comps for the packaging. In hindsight, I was happy with the final design, but at the time, it felt weird. I had lost all perspective and sense of what was right and what was wrong."

Mok wanted off the Mac project. As a young designer, his ego had been smashed. "I was working within a team. Personality and individual artistic expression wasn't part of the program, but I didn't understand that."

Mok asked to be reassigned, and Apple put him in charge of graphic design for events. One of his first efforts was the Apple IIc roll out, a project he had complete control of. Mok was finally on his own.

"Clement did it single-handedly, and to this day, I don't know how he pulled it off," Romano said. "It was immense." Apple had taken over a large San Francisco convention center. Mok designed the theme graphics used in invitations to the event, flags for the flagpoles lining the street, signs for the various areas throughout the halls, an entire Apple museum with a product display area, and stages for presentations and seminars.

Mok himself laughs when remembering the size of his undertaking. "All of the frustrations of not being able to produce, all my pent up self-expression just burst wide open. I got to do *everything*."

But while Mok healed his creative ego, his stamina deteriorated. "I learned that you don't do a historical museum and learn all about the company and the Apple II in 57 days.

"It was a very hard lesson, but out of that experience I learned to delegate because I burned out very quickly. I realized certain pieces can be designed by other people and the effect is as strong if you provide the parameters in which things are done."

Mok continued to stage product introductions during his years at Apple. He was promoted to art director and then to creative director of corporate graphics. He continued to handle events, like conferences and sales meetings, and also designed a large variety of printed material from Christmas cards to annual reports.

"Clement's style really formed Apple's design," Romano said. "Apple is a bold company, not a sedate one, and Clement's style reflected that. He put Apple on the map in the design world and the business world."

Thomas Rielly, marketing manager at Farallon Computing and a current client of Mok's, remembers being influenced by a trade show designed by Mok. "It was the Macintosh Plus introduction. It had such a big effect on me that I decided to leave my life as a retail salesman in Chicago and come out to Silicon Valley. Clement and the other members of the original Mac design team created a mystique about Apple that affected a lot of young people."

Mok has many fond memories of his years at the company. A favorite project was the 1984 annual report in which he and designer Susan Kare taught an eclectic group of computer novices how to use the Mac in their jobs. "We had such an incredible time teaching them how to use computers," he said.

He got a chance to educate other designers when he created the MacPaint manual, another of his favorite projects. Before Mok's redesign, the manual was 100 pages long and did not impress the program's author, Bill Atkinson, Mok said. Through a greater emphasis on graphics, Mok simplified the

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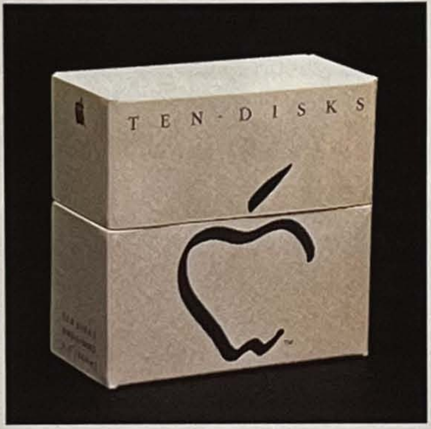
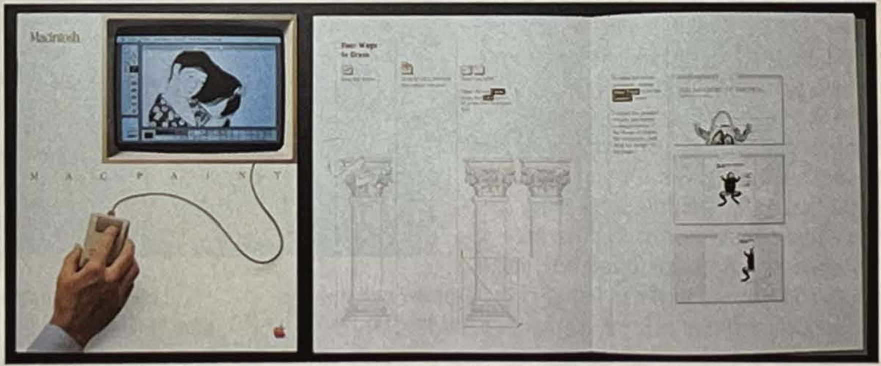
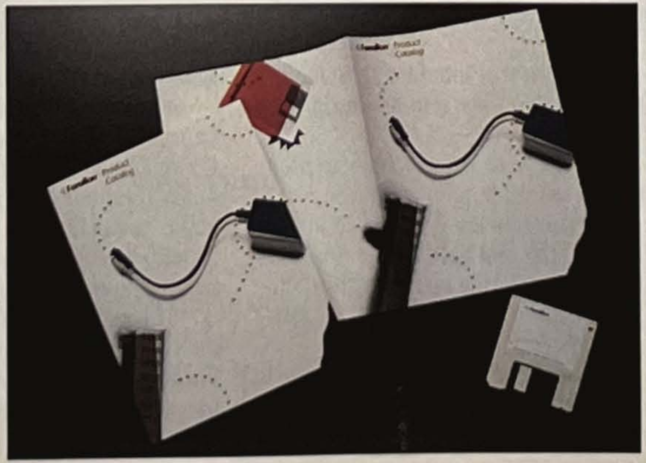


Mok helped develop the widely used Mac logo (above), and has since adapted it to design complementary packaging for other Apple products, such as the disk box pictured at left.





Mok pared down and redesigned the MacPaint manual pictured above. His post-Apple clients include Farallon Computing; at left, Farallon's product catalog.

TENpointO

CONNECT℠

At top, Mok's logo for Mediagenics' business division; below, a logo for Connect Inc., an electronic mail and information service company.

Continued from previous page

manual and trimmed it down to 32 pages. "What I needed to do was to combine standard graphics that people could relate to, like bar graphs, with simple illustrations that explained the concepts of icons, menus, and painting," he said.

Of all his work, Mok gets most excited about his recent efforts with new forms of media. It was the creation of the first HyperCard brochure, a project he undertook with Hugh Dubberly, Apple computer graphics director, that sparked future efforts delivered via HyperCard itself.

"Out of that process I learned how to do scripting. We got so jazzed about HyperCard as a new presentation medium." Mok and Dubberly later decided to make a HyperCard supplement to Apple's 1987 annual report. The supplement contains stacks with financial summaries, marketing strategies, company history, and descriptions and photos of Apple's executive staff and products.

Even though he was able to pursue a broad range of projects at Apple, Mok felt that he had to move on to gain greater freedom in his work. "I outgrew Apple," he said. "I'm the kind of person who wants to keep learning, and I wasn't learning any more there."

Insiders at Apple have said that the politics in the Creative Services Group and an "MBA barrier" in the marketing department have limited the creativity once enjoyed by designers. Mok maintains that he left to seek new challenges. "In an in-house group, you have to do promotions, and eventually it feels like you're selling the same product, with the same features, using the same points. After awhile you wonder, 'How many times can I look at this differently?' "

Now, with his own design company, he is free to choose different types of projects. Mok said he thinks he will grow and improve as a designer. "The best solutions are the ones you're not really sure of. You do your best design for something you don't know a whole lot about because you work harder trying to understand it."

It's through his search for the new and unusual that Mok's playful attitude arises. "I've been known to do things that are a bit unconventional," he admitted.

The lizard isn't the only amusing solution Mok has come up with on short notice. Once, for an AppleWorld conference, he put live models in glass display cases. "People were streaming into the show and here were these people in glass booths, working on Macs. The manager running the show freaked out when he found out what I was doing. The press went crazy, saying 'How can Apple do this?' " But the manager trusted Mok to make the call, and Apple got what it wanted: attention.

While Mok's yearning for the unusual will continue to be his trademark in his art direction and design, it will also keep him at the forefront of technology. In the future, he hopes to incorporate CD-ROM, video and sound into his product design. He also hopes to take such technology into other areas, like set design for theater.

But Mok hopes that he won't always be considered irregular for his use of technology. He is on the board of directors of both the national and San Francisco chapter of American Institute of Graphic Arts and works actively to encourage the use of computers in the design community.

"His mission in life is to get some of the best designers, both locally and nationally, to use technology in a way that doesn't limit their creativity," said AIGA's David Meckel.

Earlier this year, Mok organized and hosted a regional AIGA event called "Forum for designers who are computer virgins." Held at Apple's Cupertino, Calif., headquarters, 125 designers attended the sold-out seminar.

Mok plans to organize forums in the future at other locations across the country. "The nature of the medium evolves and changes about every six months," he said. "It's like tax laws; you need refresher courses." He said that he hopes the forums will help convince the design community that computers can be used as creative tools for design as well as cost-reducing tools for production. "Right now, I don't have the resources to turn to when I'm in a crunch. There just aren't very many people working on the same wavelength who know the tools I work with."

Personal computers like the Mac have become well-known for low-cost desktop publishing and typesetting, a reputation that actually impedes their use in graphic design, he said. "Too often computers are looked on as an adjunct to help production when they are infinitely more than that."

But even Mok admits that computers have their limits. Some effects, like that produced by watercolor, can still be accomplished more easily with traditional methods, he said. Still, he hopes computers will eventually be considered as just another tool. "There shouldn't be computer design competitions. There should just be design competitions."

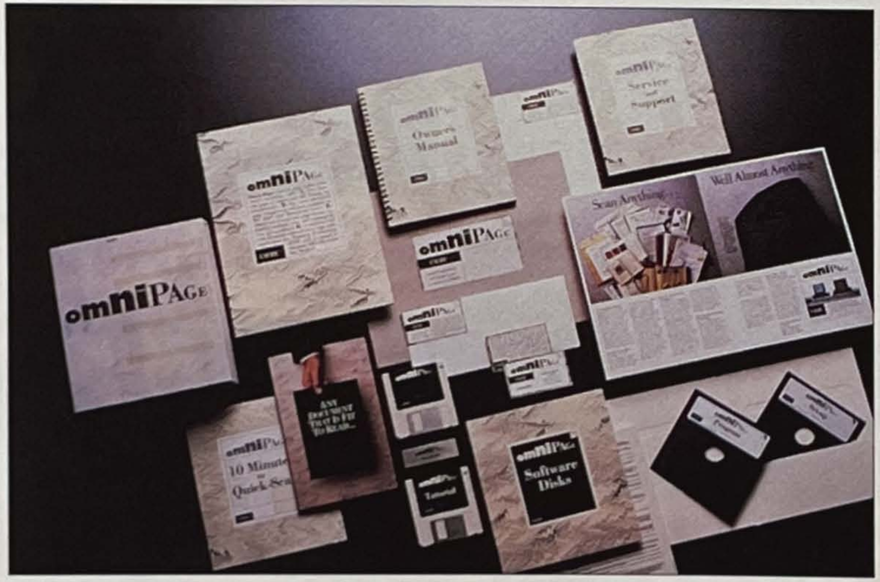
Mok may well get his wish someday. But his quest for the new is likely to keep him ahead of others in the field.

"Clement really goes that extra step to look at a problem in a new way," Rielly said. "He's always willing to push you to do something daring, distinctive and unique."

The computer world should take heed. With Mok around, one never knows when a reptile will turn up in a photo. □

Karen Sorensen is a free-lance writer based in Palo Alto, Calif.

Mok's latest design: The OmniPage project



Clement Mok considers his packaging and identity design for Caere's new OmniPage OCR software one of the most exciting projects of his 10-year career.

"It was different in that it was an integrated process, where the design and the technology used were one," Mok said. "The client was also an ex-Apple person. We had a shared understanding and trust: 'Let's go out on a limb to build a personality for this product.' "

The product's logo is unique, combining different type styles and sizes. "People say, 'Oh, nice,' when they start looking at the business card or letterhead," Mok said. "But as they understand the product more, they realize that every single feature of the product is there in the design — multiformats, different font types and sizes, centered text, flush left, flush right. All of those benefits the product can provide are there on a single piece of communication.

"It's also one of the busiest and most complicated things that I have done. The reason is that the design echoes, reflects and illustrates what the product is truly about. It's about type, so it's a type solution.

"The solution is more right brain. It is intended to place a bit more of the emotional, or ethereal, part into the design equation," said Mok.

Mok likes to use the very design tools for which he creates identity programs. "The design required infinite control over minute adjustments in order to work. Given the time component for coming up with both an idea and getting it to final art, there was no way we could have generated so many possibilities and refined the design to such a high quality of work without the Mac tools."

Even OmniPage was used: "Some of the data for the software licensing on the back of the box came from [Caere's] lawyers, so that was scanned and dropped in," Mok said.

"I feel very comfortable and at ease with the Mac tools. I don't think about the software or the hardware. I see a design in my head and try to visualize how it will look while I am also developing it on the screen concurrently."

With a vision toward future design technologies, Mok can imagine them augmenting his creativity: "It would be great if I could just do six versions of an idea, with artificial intelligence — once I taught it the kinds of things that I'm looking for — being able to work out different layout permutations. Say that it's voice activated: 'I would like to see this idea with a text-heavy treatment and with the picture about one-quarter of the page.' It would be an agent that you need to teach, just as you do with young designers. You're teaching about rules and about your expectations.

"The bottom-line is that the design process has nothing to do with better machines. It has to do with bringing past experience and present experience all together and synthesizing that into some coherent 'mess' that is both interesting and, hopefully, has a life of its own." — By Stuart Silverstone

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Mike Uriss created this image using ImageStudio paint tools.

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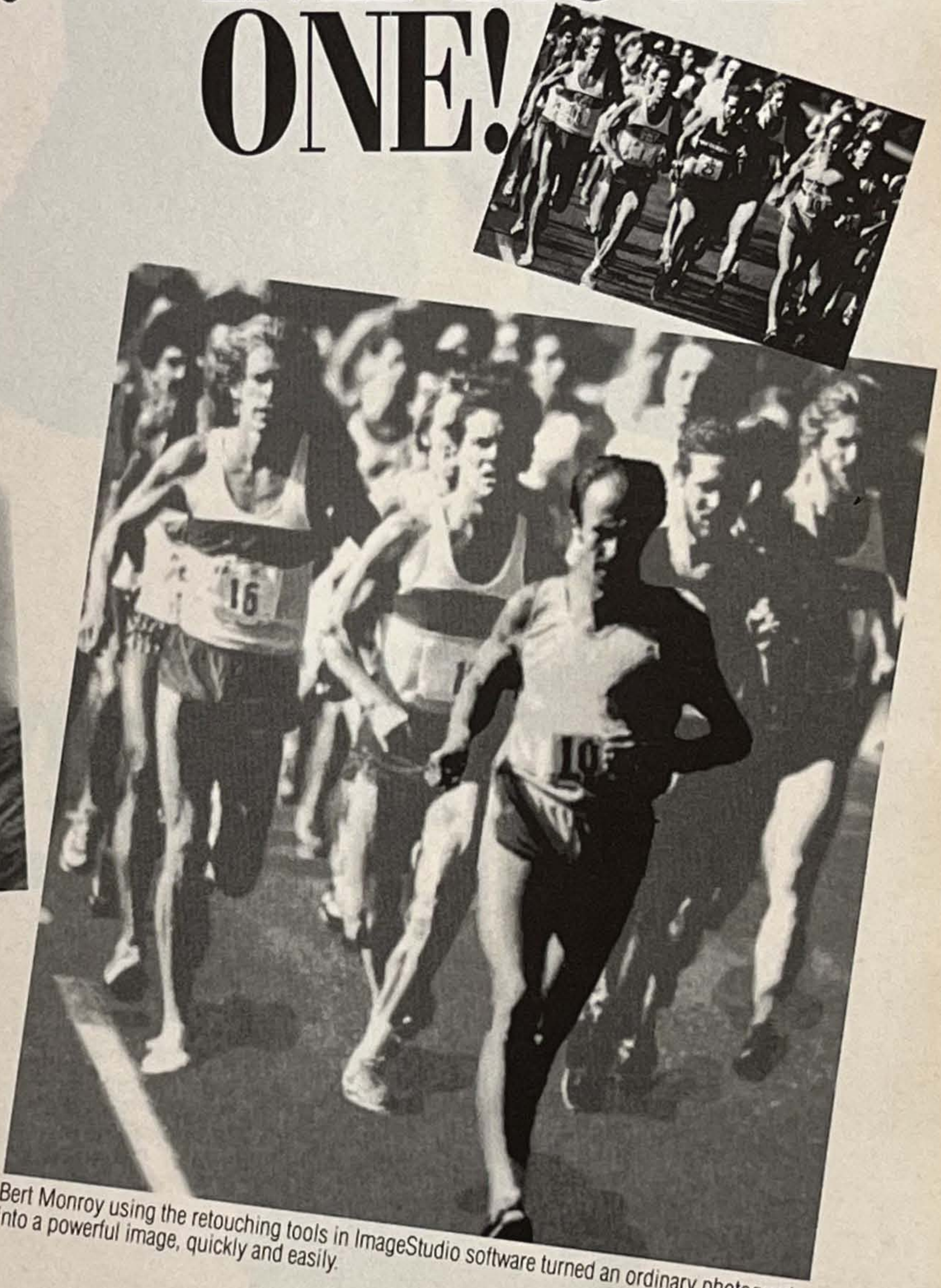

Bert Monroy using the retouching tools in ImageStudio software turned an ordinary photograph into a powerful image, quickly and easily.

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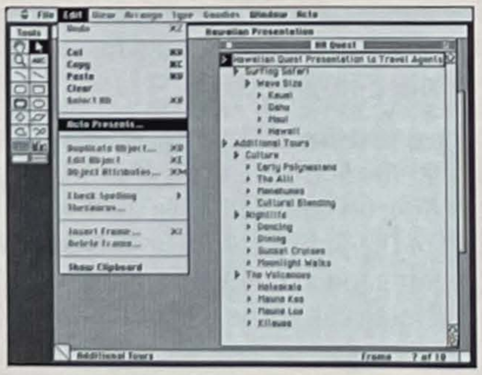

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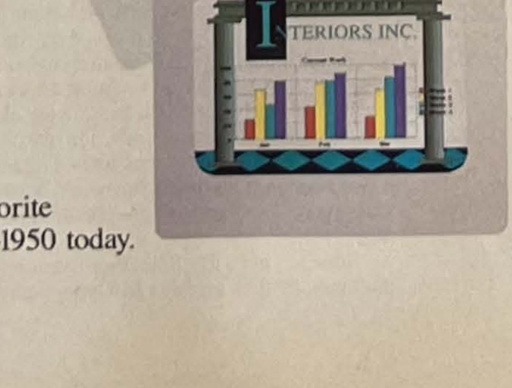

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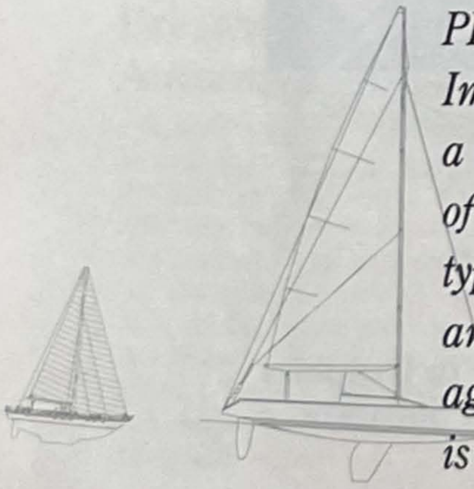
PDR Computer Impressions:

BY JONATHAN ALTMAN

MARIO RUIZ

Mario Rampone and Doug Evans

"True" typesetting on the Macintosh may have a way to go, but one of America's most innovative type shops is halfway there. New York's PDR Computer Impressions, a combination of traditional typesetters and an electronic-age enthusiast, is producing extraordinary type.



We all know the marvels of desktop publishing: dull proposals shine; profit reports come to life; corporate newsletters pop out of laser printers practically typeset. Or do they?

Well, yes and no. Thanks to desktop publishing, business documents and presentations look better than ever, but typeset they're not. In fact, true typesetting — typesetting a typographer would hang proudly above his mantle — is a near impossibility on the Macintosh. Two basic problems persist:

First, most current Macintosh desktop publishing software makes kerning — the adjustment of letter spacing within words to improve appearance and readability — about as easy as landing an F-14. Second, no Mac software adequately supports the page and text manipulation required to create truly beautiful typography. The typesetter needs to have absolute control of all the design elements, and that control simply isn't there. For most people.

As always, every rule has an exception, and this rule's exception is Doug Evans, a graduate of New York's elite High School of Music and Art, former airborne infantryman, 22-year-old wunderkind, and vice president of PDR Computer Impressions, a New York-based typesetting company.

Evans loves type — perhaps more than anyone you've ever met. He has also liked the Mac from the moment it was introduced. "I saw the capabilities of PostScript and the LaserWriter immediately," he said. "In 1984, I started studying them. Considering that I've worked 120-hour weeks for the past four years, I would say I have about eight years of experience with this stuff."

"We kern letters the old-fashioned way ... "

Amazingly, Pastore Depamphilis Rampone Inc., one of the most prestigious type houses in the United States, agreed with Evans' assessment of the Mac's potential. PDR was founded in 1976 when Mario Rampone, a typesetting software expert; Joe Pastore, a successful type salesman; and Bert Depamphilis, a typesetting hardware guru, joined forces. Since then, they have been leading-edge typesetters in New York's extremely competitive (and expensive) type environment. Clients include the advertising agency Chiat Day, IBM and graphic design giant Paul Rand. In fact, Rand, who designed the classic IBM, ABC and UPS logos, will work only with Mario Rampone. Rampone, considered one of the world's finest typographers, is no fan of desktop publishing. At 55, Rampone is tough, brisk and not easily impressed. He seems to be about the last person who would pay much attention to a 22-year-old computer buff or his fledgling company, Computer Impressions.

"I'm not paying attention to a 22-year-old computer buff," Rampone said. "I'm paying attention to a person who has applied himself — same as I have — on a Macintosh, but 10 times more. Doug eats, sleeps and dreams Macintosh."

The story goes like this: After Evans left the Army, he took a design and typography class with Eli Kinze, formerly a student of Rand's. Through Kinze, Evans got an appointment with Rand himself. Evans drove to Rand's home near Yale University in New Haven, Conn., and showed him the work he'd done with PostScript and the Mac. Rand suggested he talk to Rampone. "Rand called me up and said, 'I told this guy to go down to you because I can't use his stuff,' " Rampone said, recalling that Rand used a far more vivid word than stuff. Nevertheless, Rampone, who had been looking for a way to bring computer graphics into the shop, was impressed by Evans' work. So was Depamphilis. PDR and Evans' Computer Impressions were quickly and happily married in 1987.

Kerning on the Mac became Evans' first project. "Adobe released approximately 113 kern pairs in each of its fonts," said Evans, "but in PageMaker there's no easy way to access the kerns and make changes throughout a document. The Clipboard only supports ASCII, not kerning data. You can't even do a global search and replace."

Evans decided to bypass the Clipboard — and desktop publishing programs, for that matter. He built his own kern pairs directly into the fonts. "For example, take regular Adobe Helvetica. We'll print out pages and pages of galleys. We'll take those galleys and have an expert typographer sit down and mark adjustments to each character pair by hand, as necessary, by hundredths of an m." (An "m" is equivalent to the approximate width of the widest character in a font.) "That information is keyboarded into a text file. Basically, we add data to hex files. Then, using a resource editor, we integrate the new kerning data within the font so it automatically kerns those pairs when they occur." It takes roughly two weeks to finish one face.

So far, PDR has custom kerned the Helvetica family, the Universe family, Times Roman, ITC Goudy, and Palatino Roman. Evans plans to kern about 75 percent of the Adobe fonts. Each has essentially become a new font family or font, and PDR kerned them all, applying conventional typographic techniques because no other way exists right now. "Some people think there's a PDR kerning program, but software and hardware are essentially irrelevant to the process. What becomes proprietary, what we lock up at night and never send to service bureaus, are our finished fonts. If I gave you all the software we use, you could do nothing. But if you had my Helvetica, you could set beautiful type," said Evans.

Furthermore, you could set it on any PostScript device. It's easy to point out the Mac's desktop publishing deficiencies, but its ability to speak PostScript has changed the type world. A few years ago, PDR developed custom kerned fonts for its Bedford Meteor 3200 dedicated typesetting computers and Autologic typesetter. The kerns only worked from PDR's computers to its typesetter; they were useless for any other equipment. On the other hand, the PDR-kerned PostScript fonts will print on the 300-dpi LaserWriter, the 600-dpi Varityper, the Linotronic 300 and, eventually, on the Scitex, a high-end color-separation

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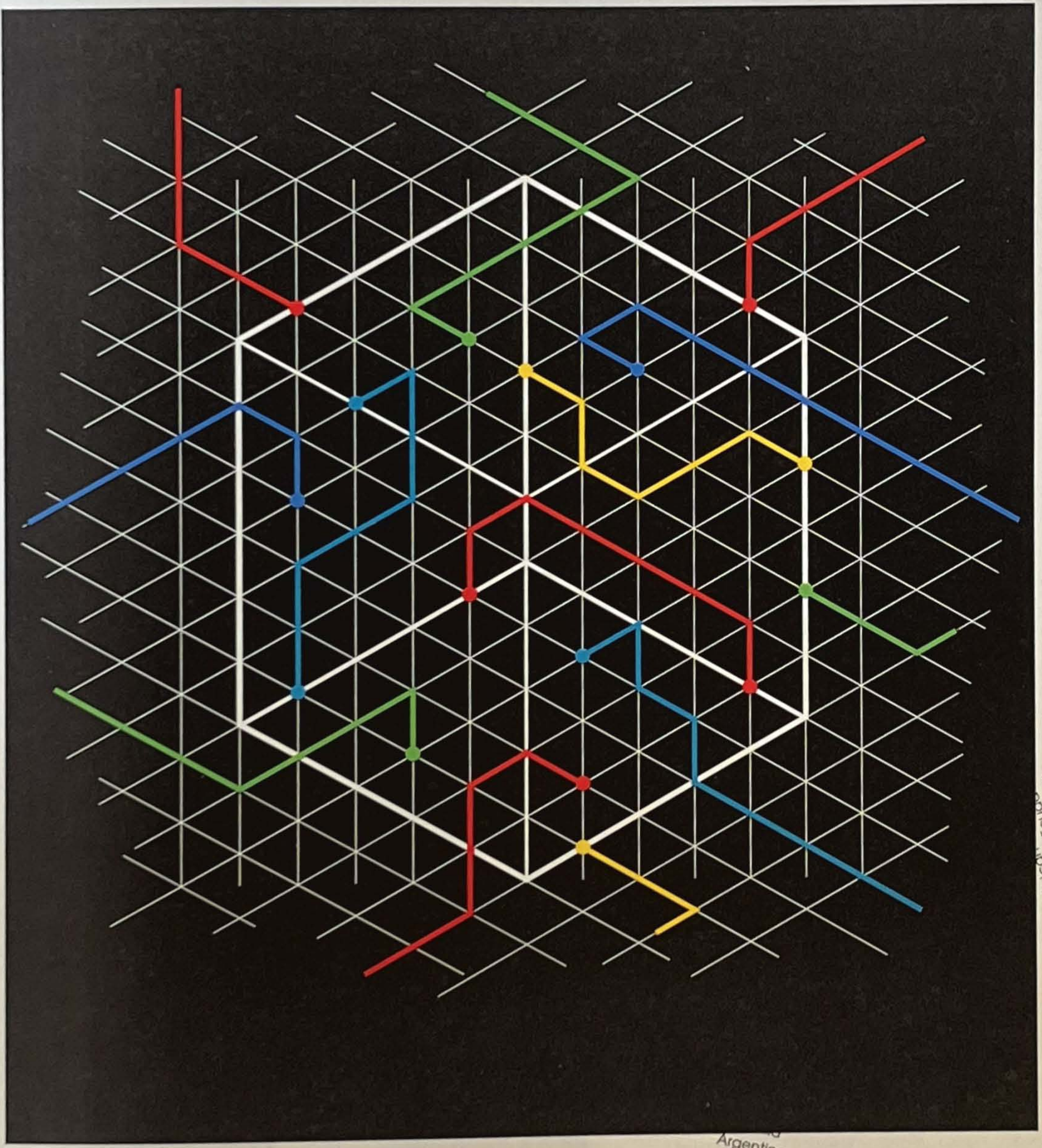
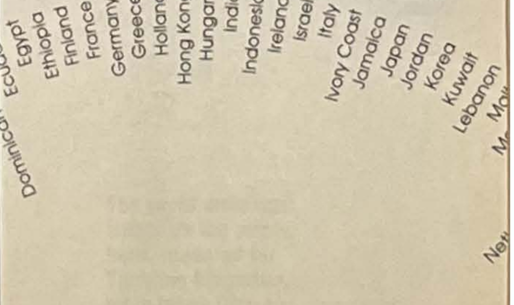
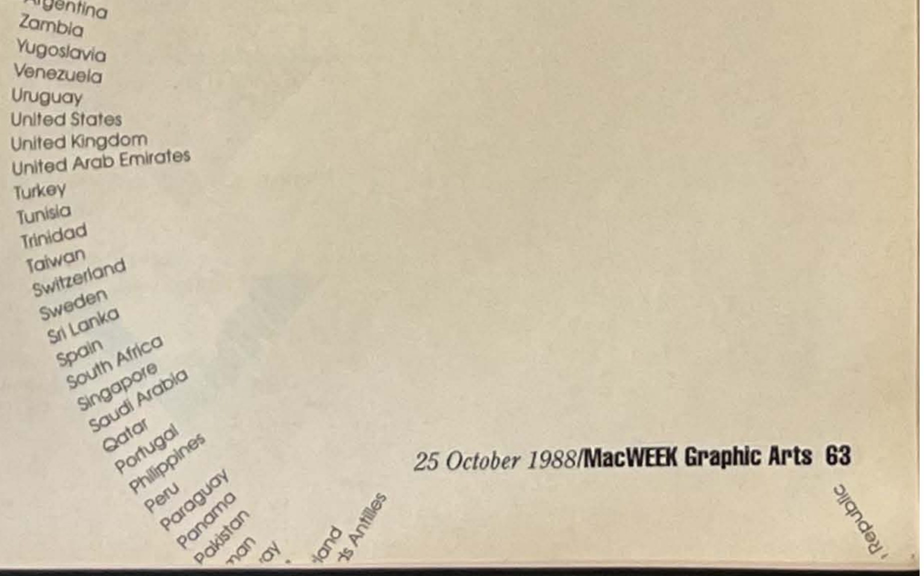
Old world meets new



This illustration was written in PostScript using JustText from Knowledge Engineering, one of the first Macintosh programs to allow direct PostScript programming.

The PostScript program for the circular illustration of the names of countries was also written in JustText. If a name of a country had to be added or deleted, the program was able to immediately reflow the text with the proper leading.





Most current Mac desktop publishing software makes kerning — the adjustment of letter spacing within words to improve their appearance and readability — about as easy as landing an F-14.

Doug Evans keeps his PostScript programmers busy in what's referred to as "Doug's computer room."

machine that will soon read PostScript. "Everyone else is going to be sending desktop publishing to the Scitex. We're going to be sending typography," Evans said proudly.

Stalking the wild graphics format won't be easy. There is Encapsulated PostScript, PostScript, and TIFF (tag image file format), to name just a few. Aldus FreeHand will open Illustrator files, but Illustrator cannot open FreeHand files, although Illustrator's Place function allows importation of FreeHand files. Quark XPress will create a PostScript file; PageMaker will create a PostScript file or an EPSF file; Adobe Separator will separate EPSF files. The L300 will print positive, negative, paper, film, emulsion up, emulsion down, right-reading, wrong-reading, high-resolution and low-resolution. Only 128 font ID numbers exist, but many more fonts are currently on the market, which means several fonts might share the same number. (See "Accessing Large Font Libraries," page 18.)

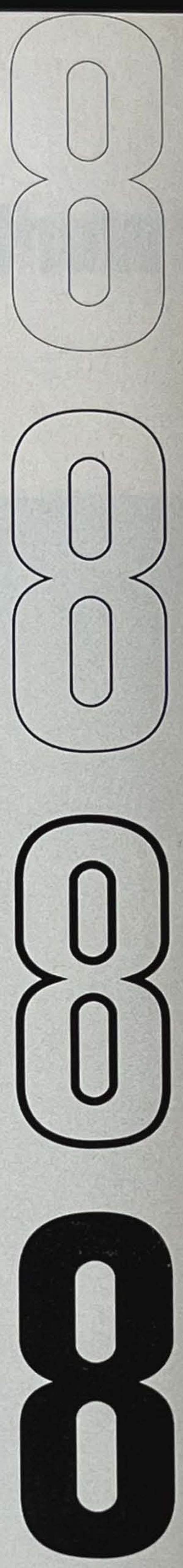
Confused? You should be. There are few standard ways of doing anything, but Evans doesn't mind. "It means we've got no competition," he said, smiling.

Well, that's not entirely true. In fact, a number of New York typographers, stat houses and design studios offer Macintosh-generated PostScript graphics (see sidebar), but PDR seems to be doing what is true typography. This is very much Evans' influence because Rampone doesn't like any of the Macintosh desktop publishing software. "Those programs they call desktop publishing are for the birds. Anytime you can sell a program for less than a thousand bucks, the features for doing real typography just aren't there," Rampone said. "We have clients who have Macintoshes and they want us to help them out. They give us financial tables, and they want the type kerned at the front of the table and they want the figures kerned. There's no software package that can do it. You know, Apple runs these ads that say, 'This ad could've been set with a Macintosh.' Yeah, could've been — but you'd never put it in print because you wouldn't like the way it looked."

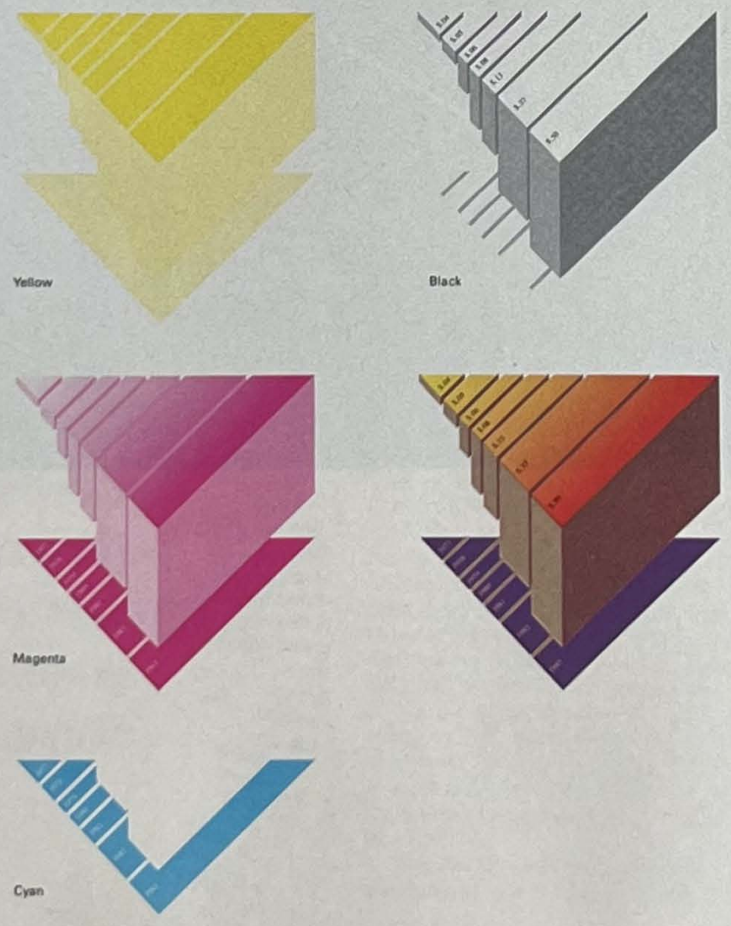
But Evans manages to get professional results, pushing the Macintosh beyond the typographic limitations the desktop publishing packages may impose. "You should see what he goes through," said Rampone, rolling his eyes.

Surrounded by four Mac workstations, two equipped with SuperMac 19-inch color screens, Evans said, "The simple fact is, if you don't know PostScript as a page description language for the Macintosh — if you don't know quite a bit about Macintosh programming itself — you can't do professional typesetting on the Mac. I've put in the time. I've spent months debugging programs, trying to get graphics to print through a thousand PostScript errors. And I've got five PostScript programmers here who know what they're doing, and who are also trained graphic designers. Anybody can have fun with the Mac, anybody can set a line of type. But only a highly trained professional could set a page out of a Fortune 25 company's annual report. It just takes expertise."

Then why bother? Because the Macintosh and PostScript, no matter how confusing and clumsy, can do things that are impossible on any other system. Even Rampone raves about the graphics. "When it comes to that, the beauty of work off the Mac is fantastic, and the revisions are so much easier. Normally, if you've got a graphic, and revisions come in, you've got to redraw it. Not on the Mac. You can enlarge or reduce and hold the line weight. That's really an advantage." To prove this point, Evans produced two examples. The first is a circular section of a map, designed by Emil O. Bieman, as part of an annual report cover. "Originally, Emil was going to use hand-drawn maps. We were setting type on the job, and I saw the illustrations. I said, 'Emil, that's



These numbers were executed in Adobe Illustrator. Designers can choose the specific line weights they want.



When the original designs for these drawings came into PDR, it was thought that rubyliths would be cut. Instead, Evans generated the images in JustText.

for position, right?' He said, 'No, no, we're going to have this retouched, and it will be fine.' I said, 'Emil, come here for a second,' and I showed him some samples of what we can do. He said, 'I need it by Monday.' This was Friday at 3 p.m. So we worked all weekend and we created three maps for him. We scanned in the hand-drawn maps and started over in PostScript. We used Illustrator, created the multilane highways, used the Carta font to set the actual road symbols, gave them real typography with our proprietary kerned fonts, used Bill Bates' Lithographer to color it and the Linotronic to do the color separations. Look at the contours, everything is clean and crisp. Look how beautiful that intersection is there. Overlapping roads. Things that just couldn't have been done by hand. You just couldn't do this by hand," he said.

Then how did they use to do maps? "By hand," Evans said. "But not like this. Not with this kind of detail and color — and not for the cover of an annual report." A quick glance at one of the crumpled road maps in your car's glove compartment will bear his claim out. No human illustrator could possibly have produced three high-quality maps like Biemans' over a weekend.

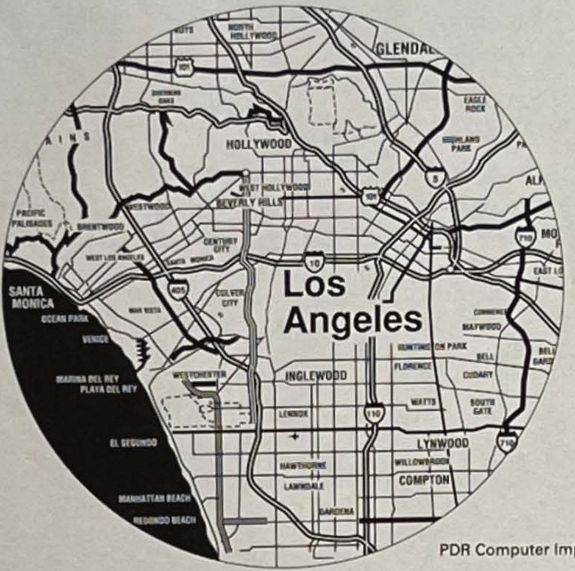
The second example is even more impressive. World-famous designer Willi Kunz sent PDR a pencil-drawn sketch of an elaborate graphic with incredibly complicated color specifications. PDR did it overnight. How long would it have taken a skilled illustrator? "Forget about it," said Evans. "This job could not have been executed. At anything resembling a reasonable cost, this job is impossible. People would have said, 'Willi, you're nuts. Do something else. Look at this: You want to go from green to yellow, two colors, light to dark gradations. It can't be done.'"

Evans said, "Those are actually cylindrical gradations that I programmed in PostScript; it's an algorithm that actually sets a light to dark tone over a 360-degree rotation. It's not a standard PostScript gradation. I had to write it. Everything is in there. It's phenomenal. The Linotronic will generate a separate light to dark tone for the black, a light to dark tone for the yellow, for the cyan, and so forth. When you put them together, you get the separate colors."

PDR officials — including Evans — believe the revolution is just beginning. Occasionally, PDR still resorts to techniques that would be the medical equivalent of using a sledgehammer for an anesthetic. Evans recently silk-screened a graphic onto a balloon, blew it up, took a photo of it, and scanned the photo into the Mac — all just to achieve a certain type distortion effect.

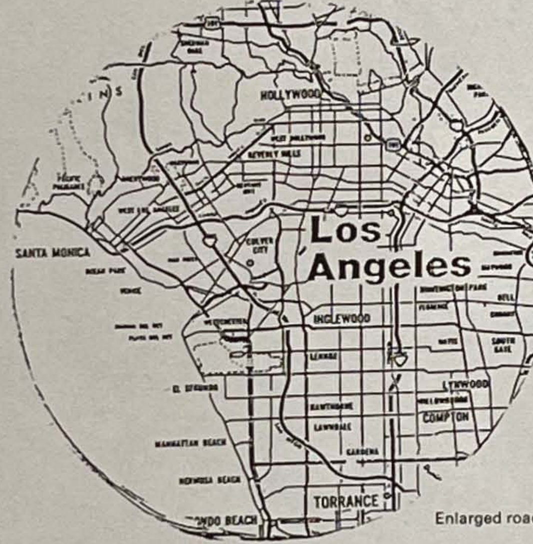
However, three things are clear. First, the age of the mechanical artist and traditional graphic illustrator is fading fast. Second, software is desperately needed that will allow typographers to produce a professional page without using every Macintosh program ever written plus the technical know-how of Mr. Spock. Third, until that need is filled, we'll have to count on a few obsessed artist/technicians like Evans to grab the Mac by its PostScript throat and force it to print out genuinely beautiful type. □

Jonathan Altman, who wrote "Peter Max Sings the Canvas Electric," in MacWEEK's May 17 Graphic Arts Supplement, is a writer living in New York City.

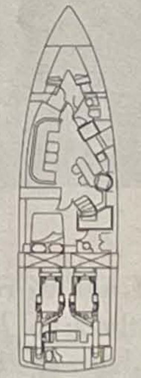


PDR Computer Impressions Map

This map, discussed in the story, was designed by Emil O. Bieman. Starting with a scanned-in drawing of the original map, PDR used a combination of PostScript, Bill Bates' Lithographer and Linotronic output for the final results.



Enlarged road map



The yacht drawings shown on the pages here, rendered for Yachting Magazine, were taken from an engineer's pencil sketches and created with both Adobe Illustrator and Aldus FreeHand.

The lettering and image of this Mobil logo were scanned into the CI Font image processor, a combination scanner and PostScript outlining software. Then both were brought into Illustrator and scaled and mastered at specific sizes for the designer, Jerry Demoney.

PostScript graphic services

PDR Computer Impressions
303 Park Ave. South, New York, N.Y. 10010
(212) 477-3300

Other New York firms that provide PostScript graphic services similar to PDR include:

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148 Fifth Ave., New York, N.Y. 10010
(212) 929-0566

Typogram
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(212) 505-1640

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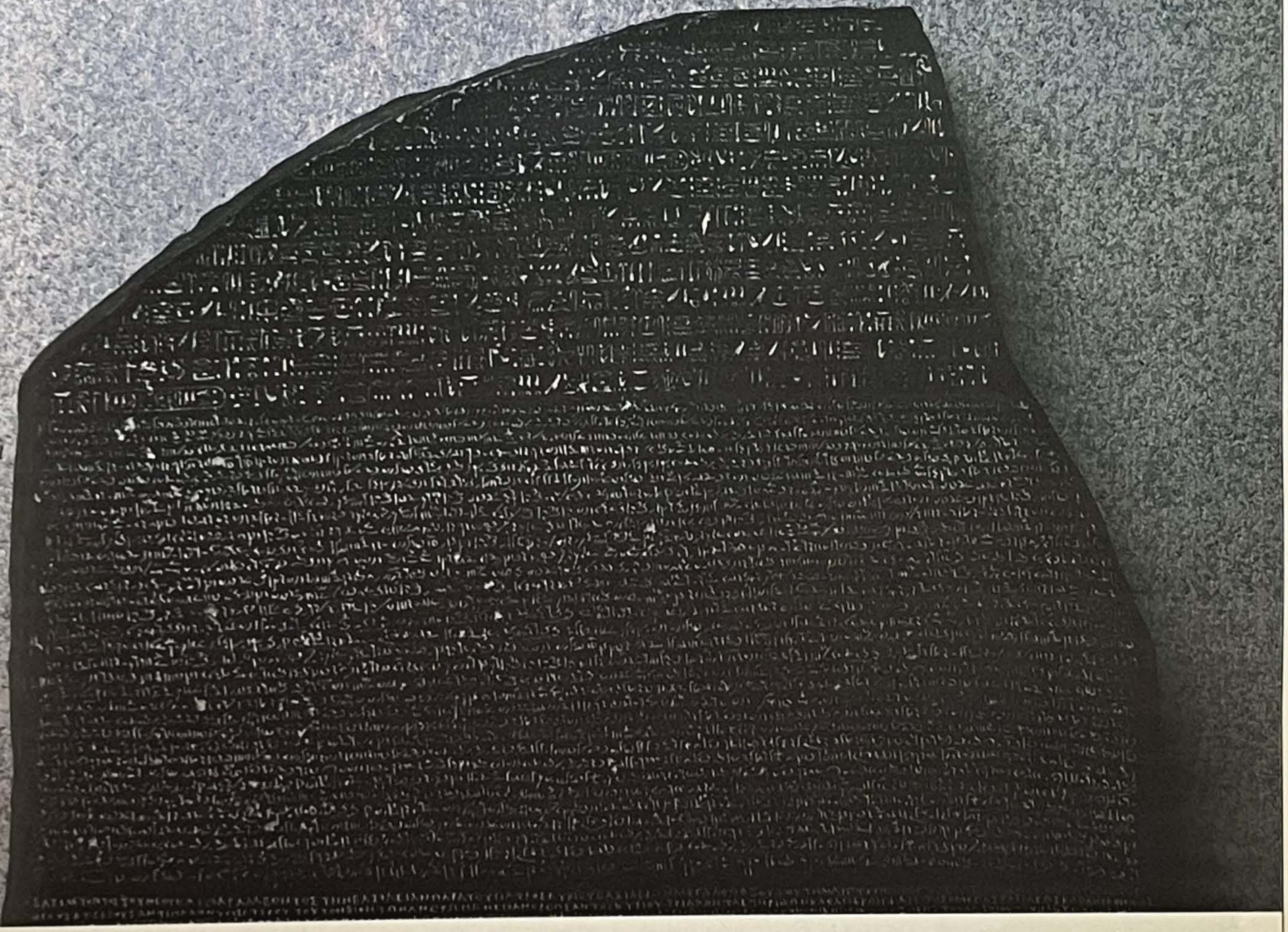

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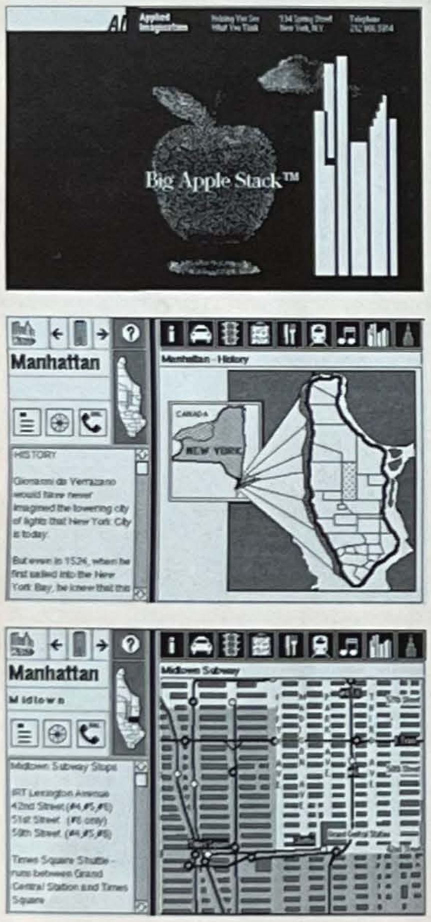
HyperCard for graphic artists

A new tool finds new applications

BY ANDREW GOODMAN



HISTORY

Giovanni da Verrazano would have never imagined the towering city of lights that New York City is today.

But even in 1524, when he first sailed into the New York Bay, he knew that this

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Applied Imagination's "Big Apple Stack" is an interactive guide to New York City, with street and subway directories, historical notes, and other tourist information.

HyperCard has been out for more than a year, and although the graphic arts world may have been a little slow to see its potential, it is catching up fast. Some of HyperCard's new uses in graphic arts take advantage of the program's ability to combine words, pictures and sound with animation. One advertising agency is finding that HyperCard can help it make television commercials faster and cheaper.

Individuals and small businesses have found that inexpensive books can be published with HyperBook Maker from Ideaform, which converts a HyperCard stack into book pages. HyperCard is also being used for on-line magazines or reference books. These on-line publications take advantage of the hypertext features as well as the ease of operation that HyperCard provides.

Probably the most developed use of HyperCard is as an alternative to more expensive but full-featured story-boarding programs — such as Storyboarder from American Intelliware Corp. Traditionally, story boards depict a film or video sequence with still drawings and printed narration. While story boards are used in feature films, they are probably most important in ad agencies that make their bread and butter from the "30-second spot."

At one such agency, Jordan, McGrath, Case and Taylor Inc. of New York, several members of the art department use HyperCard to help them sell their television advertising ideas to their clients. They have developed HyperCard stackware that they call client-linked idea presentation (CLIP).

TV usage. According to several people in the agency, CLIP is being used successfully with one large account, Cincinnati-based Quaker Oats, in part because the food maker already has Macintosh computers and didn't have to be sold on the concept of using them. The agency won a 1988 Effie, an advertising industry award, for a series of Quaker Oats commercials designed in part with HyperCard and CLIP.

The traditional process for developing TV commercials involves several steps. First, a story board is created with still drawings and printed narration and is shown to the client, who must make some substantial conceptual leaps to understand how it will look in a 30-second spot when actors and sound are added. "They look at a story board and they say we have too many cuts or ask if we have enough time to convey the idea. In a story board, you spend a lot of time discussing these aspects," said Alex Ross, the head of Jordan, McGrath's art department.

Generally, after a client approves the story board, it is turned into an animatic, using video production techniques. The animatic, primarily using dissolves between pictures, creates a rudimentary animation. Making animatics is often expensive; several versions may be needed to test audience response.

Jordan, McGrath estimates that an animatic made with traditional methods costs about $10,000 and takes as long as 16 days to produce. Using HyperCard and CLIPS to create a "Hyper-matic" version of the same commercial costs about $6,000 and takes about eight days.

Once the pictures are loaded into HyperCard, by dissolving between cards, HyperCard can get the story board stills to do everything a traditional black-and-white animatic can do.

Ross said that the agency is not putting CLIP on the market but is using it as a way of marketing its services.

The agency is a using a beta version of a RasterOps video output board to dump the Hyper-matic onto videotape, which is shown to the client just like a traditional animatic. Although artists usually draw the stills on paper and scan them into the Mac, Ross said that the artists at Jordan, McGrath are starting to take advantage of the Mac's paint tools.

More story boards. Applied Imagination, a Mac-based design company in New York, is making its story board/animatic stack called The Imaginator available for sale.

Tom Tafuto, a partner at Applied Imagination and the developer of The Imaginator, said that HyperCard animatics will become an increasingly popular choice for desktop presentations that don't require the use of color.

"I think that it is going to be accepted more and more as electronic presentations become as important to the world as print presentations are now," Tafuto said. "I don't think many graphic artists even know about HyperCard and what they can do with it."

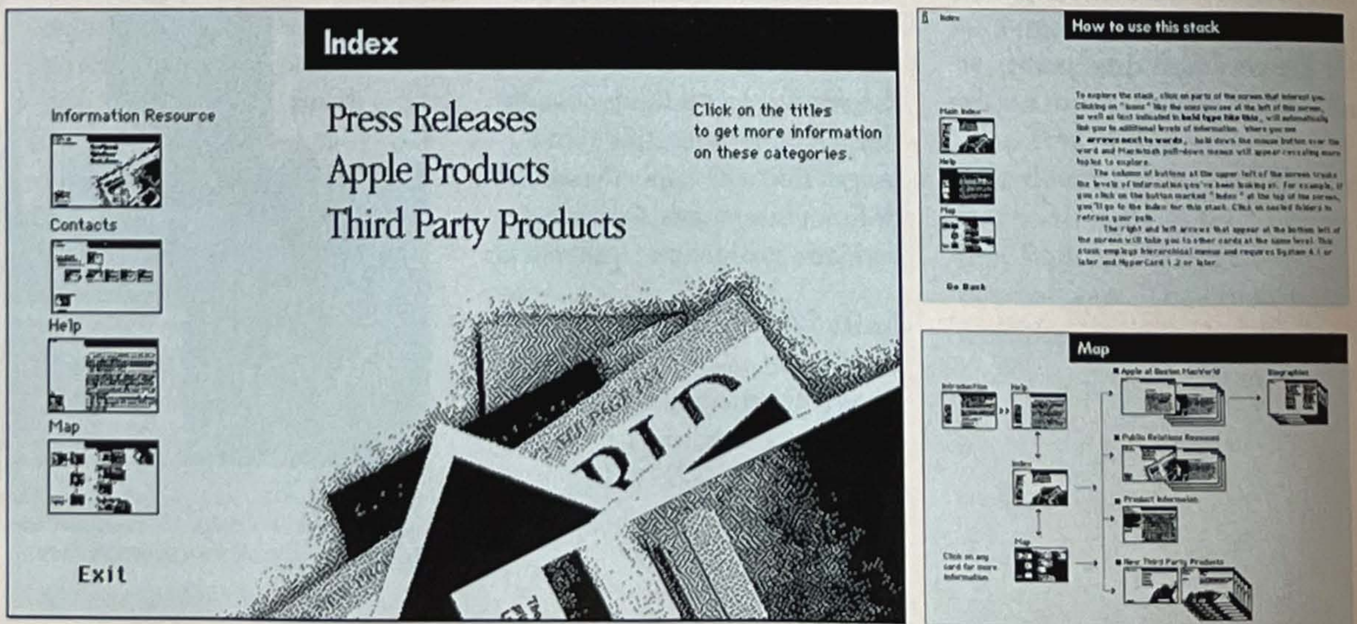
"There's not a lot of tools out there for preproduction; lots for production, but not preproduction," said John Pritchard, another Applied Imagination partner.

While The Imaginator does more to support the user in developing an idea than CLIP, which puts the emphasis on the presentation to a client, they both use similar methods of assembling sound and pictures, the two basic elements of a story board or animatic.

Adding sound. Both agencies use the MacRecorder from Farallon Computing of Berkeley, Calif., and a program called SoundEdit that is bundled with it (see the MacWEEK review, Sept. 8, 1987). With MacRecorder's microphone, a user can digitize any sound into the Macintosh and make it available to HyperCard. Users can also use a piece of the growing volume of "clip sound" available on CompuServe or import a high-fidelity AIFF file, Apple's new Audio Interchange File Format.

SoundEdit can be used to mix several tracks of sound, like music, narration and sound effects, into one sound file that can be played by HyperCard. However, MacRecorder's sound-compression facility, which reduces the size of a sound file by as much as 8-to-1, will not work with HyperCard, according to Tom Rielly, Farallon's marketing director. HyperCard does not support compressed files.

Bit-mapped clip art is available for adding pictures to a HyperCard animatic. For example, T/Maker Co. of Mountain View, Calif., offers its Click Art as HyperCard stacks. Since HyperCard does not support formats like



Click on the titles to get more information on these categories.

Click on any card for more information

Apple has used HyperCard since its introduction for promotional materials; pictured is Apple's Macworld Expo press kit, designed by Clement Mok.

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Encapsulated PostScript, the resolution of HyperCard art is limited to 72 dpi.

Although Applied Imagination's Tafuto said HyperCard's new Version 1.2 is very helpful for graphic artists, he said that slow operation is a problem when HyperCard is run on a Mac SE without several megabytes of memory. Another significant limitation of HyperCard is, of course, lack of color. In addition, HyperCard limits the screen size it can display to the size of the original Macintosh screen. "A few XCMDs (external commands) have been written to display a full screen, but you are limited in what you can do next. That's a severe limitation right now," said Tafuto.

So far, we've seen how HyperCard can match — at substantial savings in time and money — the capabilities of the traditional story board and animatic. With a fair amount of effort, VideoWorks II from MacroMind can bring real animation to the animatic.

Applied Imagination's Pritchard said VideoWorks II and its HyperCard driver, which is sold separately, work well with The Imaginator, but "most of the time you're not able to put in the time to create real animation, so you do a story board. Having used VideoWorks for about two years, the problem is that [comparable animation] takes about 10 times longer in VideoWorks than it does in HyperCard."

Jordan, McGrath's Ross agreed, saying, "We use as little [real] animation as possible and only use it where it is actually needed. Say you want to have a cracker explode. We will have it explode, but that animation takes a lot of time and memory."

VideoWorks II plays back at 12 frames per second, which is fine for simple animation. But when many objects are moving on the screen or an object must move very fast, the animation can appear jerky.

So MacroMind has introduced a product called The Accelerator, which cranks up the animation speed to about 40 frames per sec-

Continued on next page

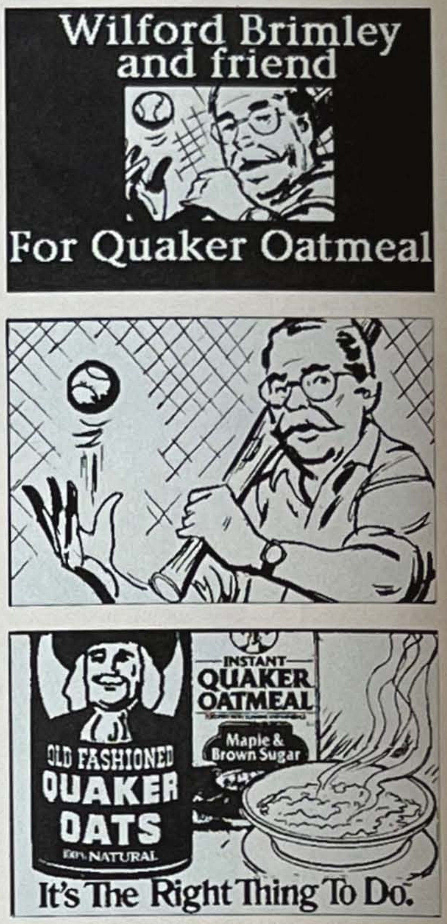
Turning HyperCard stacks into instant books

HyperCard is not likely to replace page-layout software anytime soon, but it can perform one desktop publishing task that you won't find elsewhere, at least not at such a low price. HyperBook Maker from Ideaform can automatically divide a stack into page signatures the way a commercial printer does and print a sequence of pages on both sides of the sheets of paper. Normally, said Michael Porter, president of Ideaform, if you printed a stack, you would print only on one side of each sheet. HyperBook Maker figures out what should be printed on the other side of the sheet and arranges the page sequence accordingly. After you print one side, you put the paper back in and print the other side.

The stack can be used to print one card on each side of an 8.5-by-11-inch sheet of paper, but its real value comes when it figures out the page signatures and prints four cards per sheet, two on each side. The result is a ready-to-be-bound instant book about the size of a paperback.

Keep in mind, there is no high-end typesetting here. Since HyperCard uses bit-mapped graphics, the resolution of the book is limited to the screen's 72 dpi.

— By Andrew Goodman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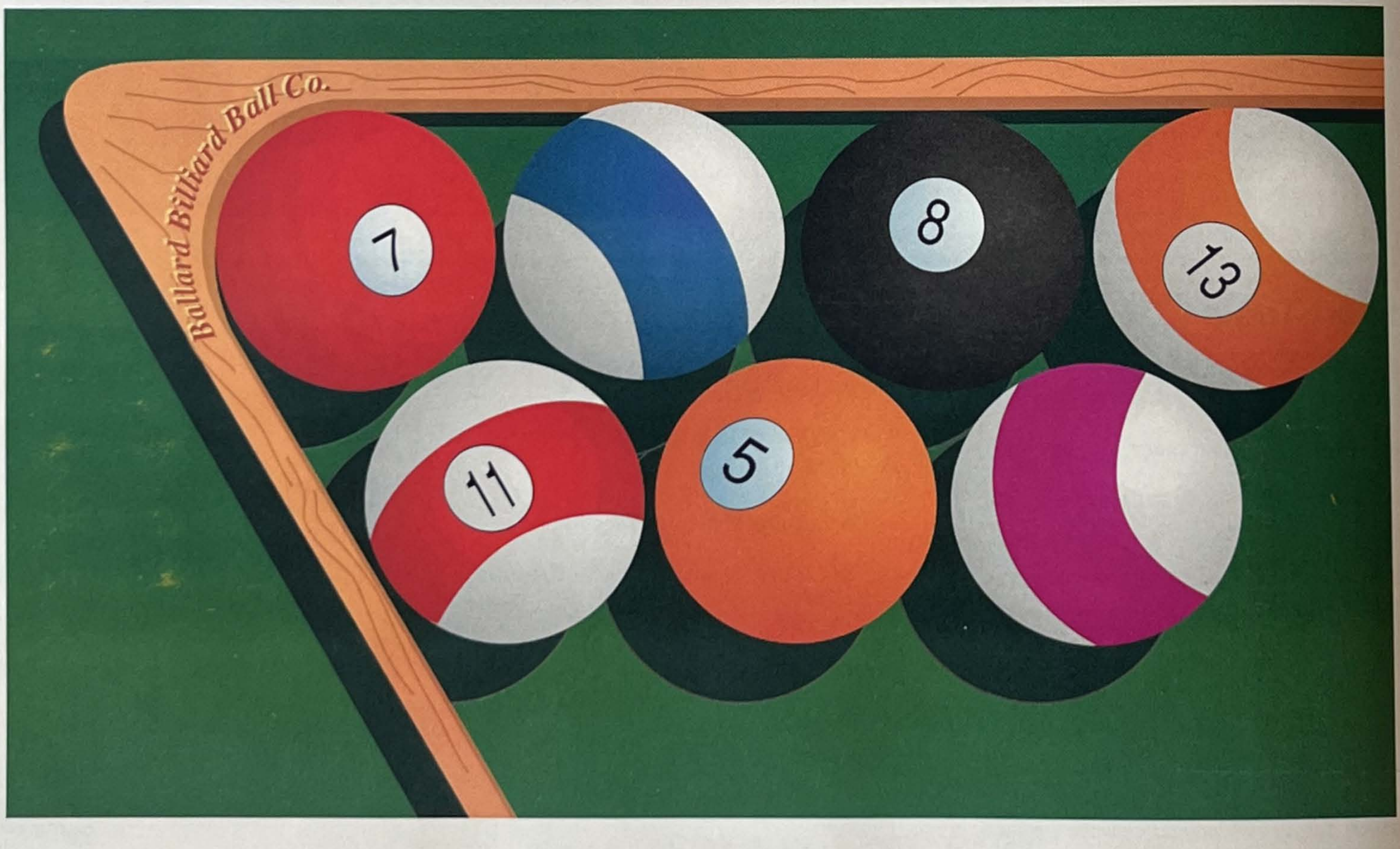
Jordan, McGrath's CLIP program was used to create an animatic from scanned sketches for this Quaker Oats presentation.

It Took An Advanced Drawing Program To Create This Art.



Continued from previous page

ond. "Most computer users will understand it if we call it a compiler," said MacroMind's Scott Wheeler. "It changes the object-oriented environment into a pixel-oriented environment, which means you can't change it anymore. Only its time and tempo can be altered."

HyperCard at Art Center. At Art Center College of Design in Pasadena, Calif., a group headed by Robert Schaff, director of computer education, last summer gave HyperCard an intensive examination, looking at HyperCard's more general applications as a graphic tool. "We gathered together key instructors, industrial designers, film designers and senior students with broad creative technology backgrounds," said Schaff. He said he envisions using HyperCard to control a host of external devices that are capable of creating sound and pictures of high production quality.

Art Center's goal is a story board evolved into the HyperCard animatic, where one by one each preproduction element is replaced by the real thing (video, film, music, voice over, etc.), all still controlled by HyperCard.

That requires pieces of the puzzle that have not been made yet. For music, that means a musical instrument digital interface (MIDI) for HyperCard. "We have found a couple of primitive MIDI readers, but we have not found something that will take a MIDI file and import it into HyperCard," said Schaff.

"What HyperCard seems to hold is the promise of salvaging and not throwing away that video comp. You shoot in 35mm film and then transfer to videotape and control it with HyperCard. The designer with HyperCard at his control can actually produce the final piece, or at least a comp that is almost completely done."

The Art Center is also working with NCR, a large electronics manufacturer in Dayton, Ohio, on a prototype of automatic bank tellers which have the same-size screen as a Mac SE.

HyperCard can be used to prototype mechanical machines and control panels. Buttons placed on a graphic of the machine can mimic the control functions, and VideoWorks II can be used to animate an action when a button is clicked. "If you prototype a blender, you want the blades to whirl. So you use VideoWorks to animate the prototype," Schaff said.

Eventually, Schaff said, HyperCard will have the capability to prototype a theme park or a building. A model of the park could be built and then shot on videotape. The designer could then use HyperCard to navigate around the park as if he or she were really there. It would require the MIDI and SMPTE drivers because the Mac alone can't handle large amounts of sound and video, said Schaff. Or it could take advantage of interactive video, where the computer controls one or more videodisc players.

HyperCard and videodiscs. That's what the Giovanni Agnelli Foundation of Washington, D.C., used to create a videodisc encyclopedia of Italian civilization called de Italia. De Italia can be played directly by an interactive videodisc player, which costs $800 to $900. It also can be controlled by a Mac using a HyperCard stack.

The Voyager Co. of Los Angeles also uses interactive video. The Voyager Co. has a library of about 60 videodiscs, including catalogs of the Louvre in Paris and the National Gallery of Art in Washington, D.C.

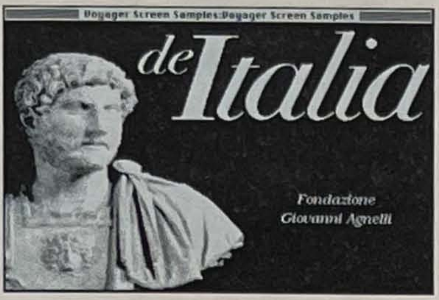
Apple is developing a "knowledge navigator" that also makes substantial use of interactive videodiscs. Apple has used HyperCard since its introduction to supplement its promotional materials, starting with an annual report and a series of HyperCard press releases.

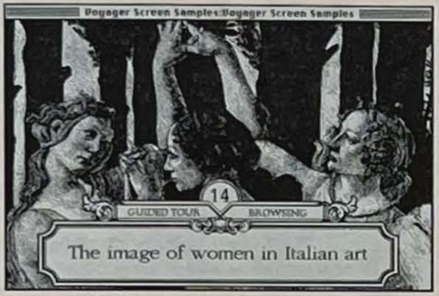
To create those materials, Apple turned to Clement Mok, who designed some of the original Macintosh products while working at Apple (see story on Mok, Page 56).

Mok found that visual conventions needed to be established so that people not versed in HyperCard would understand how to move around in the stack. It's a good idea, he said, to have a map of the stack so that people can find their way around or to make sure they haven't missed something.

As additional HyperCard support is developed, HyperCard will offer an increasing range of options for ad agencies, film makers and other creative people. As more artists use and experiment with HyperCard, in applications ranging from story boards to annual reports, its power will continue to unravel. □

Andrew Goodman co-hosts and is chief correspondent for "The Computer Show," a nationally syndicated TV program.

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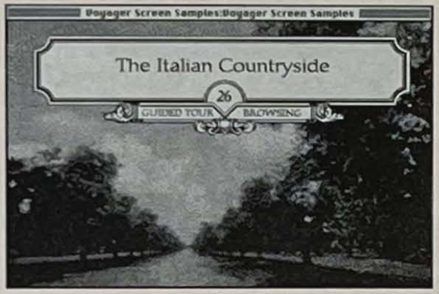

Above right: screens from *de Italia*, a videodisc encyclopedia of Italian civilization.

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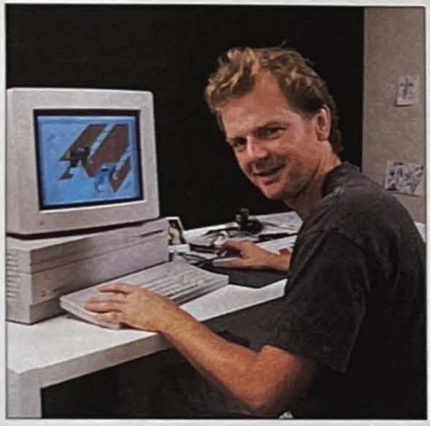
How can I get it off the screen?

A question often asked by graphic designers is how to transfer stunning color images from monitor to paper. Color printing is advancing, and here we tell you just how far.

BY DAVID BIEDNY

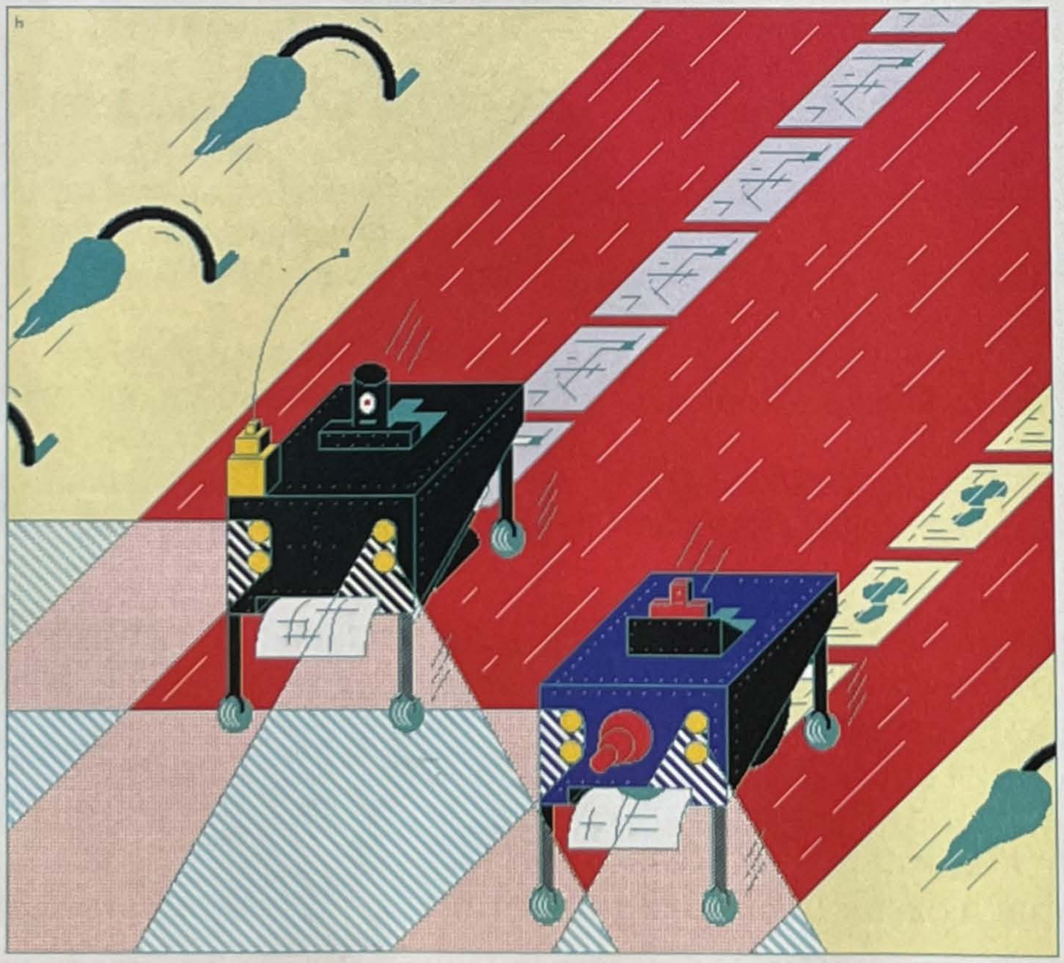
Show a client or associate the spectacular color graphics and layouts that one can craft with programs like Electronic Arts' Studio/8, SuperMac's PixelPaint, Adobe Illustrator 88, FreeHand from Aldus, Quark XPress and others, and the first question usually goes something like this: "That looks great, but what do you do with it? How can I get that off the screen? Can I walk away with a color print?"

The rapid acceptance of the Macintosh II in the professional design and production communities has created a pressing need for desktop color output. While there are various methods of getting color from the screen to paper, film and videotape, each with advantages and drawbacks that limit their applicability, in this article we focus solely on the world of color printers.



CINDY CHARLES

Illustrator John Hersey used PixelPaint on the Mac II to create the illustration below.



A color printer. Taking advantage of currently available color printers means, first of all, understanding the limitations of the state of the hardware. Most of the color printers on the market today are excellent for creating rough drafts of the color artwork or layout that is on the screen. If you're working on a slide presentation in Microsoft's PowerPoint, a product package design in PixelPaint or a color layout in XPress, color printers are a valuable tool for handing a client color comps.

In a typical design studio, the amount of work involved in creating color dummies fully justifies the use of a Mac II, and the cost of contracting outside art talent and color services can make a color printer a reasonable investment as a color comping machine. One-pass color printing provides a good idea of overall color interactions without precise color matching, in many cases a sufficient — and cheaper — method for creating pre-press proofs. But they are simply not sufficient for final artwork, which in any case typically involves creating color separations onto film, which is then used by a printing house to create color printing plates.

Color printers offer various levels of software support: PICT I, II or PostScript, the page description language from Adobe. PICT I compatibility implies that the printer supports the basic eight QuickDraw colors found in software such as Cricket Graph from Cricket Software and MacDraw II from Claris. These printers are meant to be used primarily with the Macintosh Plus and SE, which only support PICT I. Macintosh II users should be concerned with PICT II support for programs such as PowerPoint, and PixelPaint. And in the world of color printers, PostScript is the exception, not the rule. Only the QMS ColorScript from QMS Inc. has PostScript ability at this point, but this is crucial for the highest-quality text and graphics support (with software like FreeHand, Illustrator, Aldus' PageMaker and XPress). To ensure that the programs you use will work with a particular printer, it's extremely important to try them out with the unit. Many service centers are beginning to offer color printer output, and it makes good sense to rent time on one to experiment with various software packages and the quality of output the printer provides.

One of the most serious drawbacks of the use of color printers is the relatively poor text quality. Only a PostScript-compatible color printer can offer a reasonable type library for the professional designer. The non-PostScript units utilize the same method that Apple has adopted for the ImageWriter LQ: high-resolution bit-mapped fonts, which are much more limited in variety than the PostScript faces. And unlike PostScript fonts, bit-mapped fonts cannot be arbitrarily scaled, which means you need separate renditions of a font for each size desired, which eats up disk storage space.

Do colors match? Color matching is probably the most disappointing aspect of using current color printers. The printed colors are simply not as saturated or vibrant as their screen counterparts. This is primarily because of the way colors are created on a monitor. In addition to the fact that screen colors are created as combinations of red, green and blue electron guns, the light source is behind the screen. On a printed page, the color that you see is the result of natural ambient, or even artificial, light being reflected off of the paper. The vast difference in the nature of back-lit light vs. reflected light causes the substantial perceived difference in the quality of the color from the screen to paper. This is another reason that output to film recorders, which essentially takes a picture from a very high-resolution CRT in the film recorder unit itself, will almost always result in better color matching than could ever be achieved on paper.

Finally, most of the color printers on the market are also limited by resolution, the highest being 300 dpi for the thermal wax and advanced inkjet technology. Although higher-resolution output is promised, most likely in the form of color Xerographic technology, the price of those printers is likely to be prohibitive for all except the largest companies and output centers.

Inkjet printers. The oldest color output technology is based on the inkjet concept. Inkjet printers work by spraying tiny dots of ink from

Continued on page 74

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Apple's new standard for color display

At Apple's Spring Developer's Conference in May, the company officially blessed a standard for displaying 24- and even 30-bit color, also known as "true color" on the Macintosh. This standard gave a green light to many Mac hardware developers who had been hesitant to design high-end color boards without Apple's support. The standard outlines the manner in which applications and hardware should interpret and display color information stored in Apple's proprietary screen drawing language called QuickDraw.

Apple is rewriting its QuickDraw routines to support 15-, 24- and 30-bit color instead of the eight-bit limit currently imposed. Since it is easiest to represent information in multiples of eight bits, Apple will use 32 bits to store the new color information. Although internally QuickDraw has always saved 48 bits to store color information per pixel, a method of writing color directly to the digital-to-analog convertors will be incorporated into the new version of QuickDraw. A new file format extending the color capacity of Apple's existing PICT2 format will be needed as well.

FULL CHUNKY AND CHUNKY PLANAR. When running in 24-bit color mode, each pixel on the monitor's screen is represented by 24 bits of information. Since one bit can be either "on" or "off," this means that 16,777,216 combinations of 24 bits may be used to represent the color for each pixel. That's more than 16 million possible colors per pixel.

Since most monitors display fewer than 16 million pixels, the number of colors on the screen at one time when running 24-bit color ends up being limited by the number of pixels available. On a 19-inch monitor at a resolution of 1,024 by 768 pixels, about 780,000 colors can be displayed at once.

The 24-bit color method on which Apple settled is often referred to as "full chunky," which means that color information for a particular pixel on the screen is stored and accessed by QuickDraw in one long "chunk," then passed directly to the digital-to-analog convertor that sends the color to the Mac II's screen. The 24-bit chunk is sectioned into three parts for red, green and blue.

The alternative to a full chunky implementation of color is what has become known as "chunky planar," a method that RasterOps introduced in its 24-bit boards in October 1987. Chunky planar draws color in three passes, eight bits each for red, green and blue. Because of the way the Mac II's NuBus is designed, this method is not necessarily slower than a full chunky approach, according to RasterOps officials.

Two technical barriers prevented engineers at RasterOps and other companies from designing a full chunky board in 1987. First, Apple's Color QuickDraw had not been rewritten to accommodate "true color." This is why chunky planar technology manipulates color eight bits at a time. When System Software Version 7.0 is released (rumored to be anywhere from January to July 1989), Apple has promised a version of QuickDraw that supports 24-bits per pixel.

The second barrier was Slot Manager, the software in the Mac ROMs that controls access to the NuBus. Before February 1988, the Slot Manager could address only 1 Mbyte of information per slot. Each add-in board inserted into a slot in the Mac II could, under most circumstances, contain no more than 1 Mbyte of addressable memory.

Whether using the full chunky or chunky planar approach, memory in the form of a "frame buffer" on the board is used to store color information for each pixel. When the Slot Manager limited the addressable memory on the board to 1 Mbyte, the frame buffer was likewise limited. For a board that offers full chunky 24-bit color at a resolution of 1,024 by 768, the frame buffer needs to be larger than 2 Mbytes, too large for the old Slot Manager.

The chunky planar method was created to bypass these problems. Now that the new ROMs with the upgraded Slot Manager are shipping and 24-bit Color QuickDraw is on the way, the road has been paved for developers of high-end color hardware.

THE MISSING LINK: 24-BIT OUTPUT. Apple's standard, however, opens floodgates of color-related issues, not the least of which is a question lurking in the minds of many graphic artists: How important is 24-bit color display when there is no affordable solution to 24-bit color hardcopy output?

There seems to be no question in the minds of those who follow the Mac-to-video connectivity market that true color has already found a niche, giving way to such Mac products as true-color frame grabbers, true-color genlock boards and high-resolution true-color display boards.

Color output, however, is not yet an affordable reality for many who are using the Mac for graphics applications, and that is a deciding factor for many graphic artists who might be considering the Mac as a design platform.

"As far as I'm concerned, there is no color on the Mac, at least not yet," said Michael Ross, a graphic designer, consultant and president of NeoScribe International based in East Haven, Conn. "Graphic designers don't care about screen display. They display what they want to print."

Color printing technology for the Mac, according to Ross, has a long way to go. The 300-dpi QMS ColorScript 100 "comes the closest in an affordable price range," he said, "but we need at least 600 dpi to have output good enough to show to clients."

"It's imperative that an image come out of the computer and look right for proofs and comps," said Thomas Weisz, president of Weisz Yang Dunkelberger Inc., a graphic design, marketing and consulting company based in Westport, Conn. Weisz said the Mac does represent a turning point in the way graphic information can be communicated, moving from "photostats pasted onto a board," to "transmitting the whole thing into a color description of a page on disk."

Because of the sophistication and requisite accuracy of final color output, color pre-press houses may never be replaced by "desktop color printing," Weisz added.

But as true color takes hold in the Mac market, the size of color files and the associated cost of storing them also become concerns. With an average 19-inch 24-bit color image taking about 2 Mbytes, fast high-capacity drives, including CD-ROM drives, become essential to those who want to store and manipulate a library of color images. — By Jonathan Perrow

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a nozzle in the print head onto the paper. Color inkjet printers have multiple ink wells, consisting of base colors (typically cyan, magenta, yellow and black, or CMYK) that are mixed, or dithered, to create the effect of many colors. Inkjet technology has had considerable penetration in the output market due to its relatively cheap cost. The PaintJet printer from Hewlett-Packard, arguably the most popular color printer in the PC world, costs less than $1,500.

Inkjet technology does have some important drawbacks. There are inherent problems in controlling the size of a dot of ink created in this fashion, and the fact that the ink moves through the air before making contact with the paper increases the possibility that the dot will smear. Also, the ink nozzle in the print head tends to clog up with prolonged use, which requires the user to periodically clean out the nozzle.

The Hewlett-Packard PaintJet, as previously mentioned, is one of the most popular color inkjet printers currently available. It is inexpensive, has the ability to create a large number of dithered colors, offers 90-dpi to 180-dpi resolution, and provides very acceptable output quality. Although it has taken the PC world by storm, its penetration into the Macintosh world has been somewhat lackluster due to the dearth of usable software drivers. Although drivers from companies like SoftStyle are available, Hewlett-Packard doesn't officially support the use of the printer with the Macintosh II, making it difficult for software developers to ensure compatibility with the unit. Cricket Software is reportedly preparing its Expression drivers, which support the use of the PaintJet with Cricket software products, to be used as generic printer drivers for most applications, This may open up the popularity of the PaintJet in the Mac community. Until the issue of driver availability has been resolved, it is difficult to make determinations regarding software compatibility of the PaintJet with the more popular Mac applications.

Sharp Electronics Corp. recently introduced its JX-730 color inkjet printer, which is capable of 180-dpi printing. The printer connects to the Macintosh Plus and SE through the serial port and to the Macintosh II with a custom high-speed parallel interface card. The unit employs color dithering of its four basic ink colors to produce dithered secondary colors and has an extra-wide (14.5-inch) format carriage. The unit will include a chooser-level driver, but as of press time, Sharp was unsure whether it would support QuickDraw I's 16 colors or QuickDraw II's full Macintosh II color range. For optimum paper handling, optional tractor and sheet feeds are available for the unit. The JX-730 includes only one built-in typeface, and enhanced bit-mapped font support had not been finalized at press time. The JX-730 is expected to be released in late December for $1,995, with the interface kits costing approximately $500.

Inkjet technology isn't always cheap. At the Macworld Expo in August, Iris Graphics Inc. demonstrated its model 3024 inkjet unit. The printer is capable of 200-, 240- and 300-dpi resolutions and offers very accurate color

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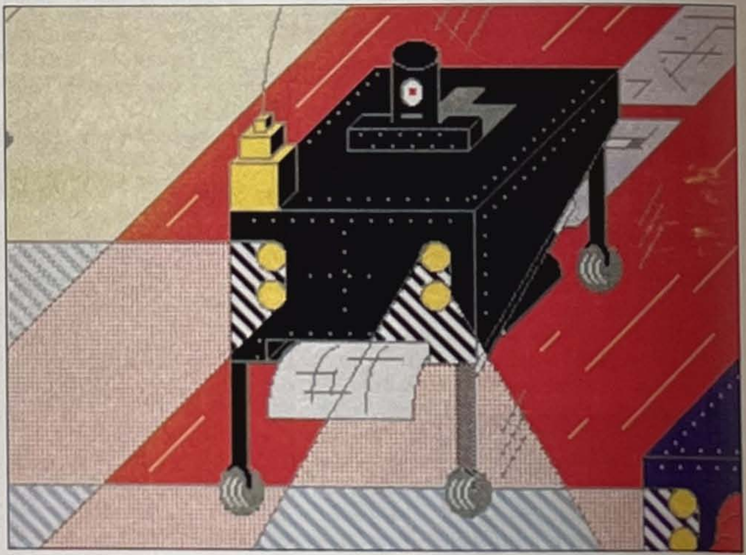
A detail from John Hersey's illustration printed on the 4693D Tektronix.



The same detail printed on the QMS ColorScript.

Continued from previous page

matching and reproduction. Although the unit is based on color QuickDraw, the company didn't specify application compatibility at the show. The most amazing thing about the unit is its sheer quality and flexibility. The device can print on any hydrophilic, or water-accepting, medium, including coated or uncoated stock, acetate, cloth and silk. The company showed a printout on sandpaper. This kind of power doesn't come cheap. The unit sells for $75,000.

An unusual variation on inkjet technology is the Howtek Pixelmaster inkjet printer from Howtek Inc. which incorporates a drum-based assembly as the base for the 32 ink nozzles (eight each for cyan, magenta, yellow and black). The 240-dpi unit utilizes a plastic-based ink that results in prints with an unusual raised texture, unlike anything the other inkjet units produce. Howtek hasn't announced support for the Macintosh, but expects to do so by the final quarter of this year.

Thermal wax. The most popular type of color printer in the Macintosh market is based on thermal wax technology. These units use special thermal paper and cannot print on plain paper. The thermal wax printing method is fairly straightforward. Color wax film in the primary CMYK printer colors is sandwiched between the paper and a thermal printing head. As the paper advances through the printer, it rolls onto a metal drum, which absorbs much of the heat created by the thermal head. The thermal head presses the film to the paper, applying heat to melt the wax film onto the paper. The paper is fed through the printer four times, a single pass for each of the four colors. The finish of the printouts tends to be extremely smooth and glossy, due to the nature of the wax film. While some may think that the thermal nature of the unit may lead to overheating, this doesn't appear to be the case. Units running all day seem to perform well, regardless of how long the unit has been turned on.

The 4693D from Tektronix Inc. is the most popular of the thermal wax devices and fully supports any PICT I or II applications. It includes extensive chooser-level printer-driver support with a multitude of options, scales large bit-mapped type down to smaller sizes for optimum text quality and can print on either thermal paper or special acetate. Paper is fed in through a standard cassette, which supports both standard letter and optional legal sizes. The color-matching abilities of the 4693D are its main drawback. Colors tend to print much darker than they appear on the screen, and even though the driver software allows you to substantially manipulate brightness values, it's difficult to obtain acceptable color matches.

The QMS ColorScript is the king of the high end, due to its exclusive use of PostScript as a page description language. The ColorScript includes a separate RIP (raster image processor) with built-in hard disk for image caching, and the paper-handling capabilities extend to 11-by-17 inch paper. The active print area is actually much less than this; there's a 1-inch gutter around the entire page. PostScript compatibility gives the ColorScript unequalled text and graphics handling, but unfortunately the unit doesn't support QuickDraw, severely limiting the number of applications that can be successfully used with it. The unit's color matching abilities are more accurate than the Tektronix's, but still aren't nearly exact. It's advisable to try printing a custom color test to evaluate whether the color matching of these units is acceptable for your needs.

Hints for the future. One of the major missing pieces in the color-printer puzzle is the as-yet-to-be-produced color Xerographic-based devices, or color laser printers. A color laser printer would essentially do what the thermal printers do. As it prints an image, it passes the paper through four different prints, one each for the four primary printing colors. The technology that will form the foundation of these future printers currently exists. Canon has introduced a new generation of color copier machines that is quite capable of potentially being interfaced to any variety of host computers. The Canon color copier line uses four toner cartridges and includes numerous built-in features for handling color tables, stretching and distortion effects, color remapping and replacement, with a built-in graphics tablet for manipulating images.

How and when this technology will link with the desktop remains to be seen, but one thing is certain: It will play a leading role in the future of the color pre-press industry. In the meantime, a mixture of inkjet and thermal technology with high-end systems for process color separation will remain the norm. □

David Biedny also wrote "The incredible importance of scanners" in this supplement.

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Teaching the electronic palette

BY SUSAN KATZ

The Macintosh is becoming institutionalized. As design schools include the Macintosh in their curricula, young designers are introduced to the electronic aesthetic at the outset of their artistic education.

Picture a class in life drawing held this past summer at the New York School of Visual Arts: student artists and 12 Macs in a circle, with a nude model in the center. The students were making original sketches of the model on the Macintosh screens instead of doing it the traditional way on paper.

In design schools across the United States, more and more art students are sitting at Macintosh computers and working with mouse, scanner and laser printer. The marriage between design and technology is beginning to take place. Design schools are taking up computers as tools, integrating computer skills into their core curricula alongside color, light and design. And many are leaning toward the Mac as their computer of choice.

Several years ago, the computer courses offered at art and design schools included a fair amount of programming. Now, because of the availability of drawing and paint software and the advent of HyperCard, learning to write computer programs is no longer a requirement for the art and graphics student.

"We're teaching people how to be artists," said Tim Binkley, director of computer education at the School of Visual Arts and chairman of its graduate program in computer arts. "We cannot be content with teaching people simply how to operate equipment. It means devising a curriculum that teaches students about art making and aesthetic principles, and attracting faculty who've used computers to make significant artistic statements."

Students learn the technology of design at San Francisco's Computer Arts Institute, founded three years ago by Rodney Stock.

At the Rhode Island School of Design in Providence, R.I., Steve Subotnick, director of the school's academic computer center, has an artistic background, primarily in animation and painting. Joel Schmidt, technical adviser to the center, said, "We feel it's very important that the overall planning and guidance for the center be provided by someone who's an artist."

Wayne Godwin, learning-resource specialist at the simulation lab filled with Macs at North Carolina State University's school of design in Raleigh, placed emphasis on the computer as a tool. "We're looking for methods of integrating computers into the studio so it's just a part of the design environment." In an integrated environment, "it would be as natural for a professor to ask a student to do a computer graphic analysis of a project [as it would be to] ask a student to do a drawing," he said.

Pushing creativity. Donald Gambino, computer designer and illustrator on the faculty of the New York School of Visual Arts, tries to teach his students how to use the Mac in a creative way. In his class, Graphic Design with the Macintosh, Gambino poses the question to his students: "How can you get something creative from the Macintosh from something you saw in the street?"

To get their creativity going, he uses Roger von Oech's books, "A Whack on the Side of the Head" and "A Kick in the Seat of the Pants." The students start out designing a logo, then are given an assignment to design "a living environment" for human beings.

"I don't use the word 'house,'" Gambino said. "That's where the creativity comes in. I've seen igloos, shacks, etc."

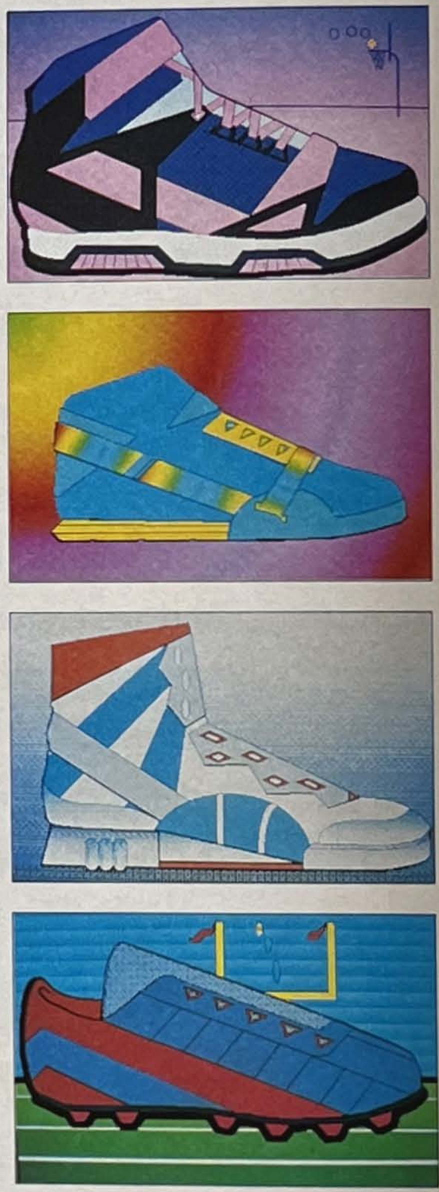
He has them create vehicles that transport human beings and a 3-D object that will fit in a pocket. They also create a poem or piece of original prose and have to typeset it on the Mac, thinking, "What typeface should I use? Centered? Rag left? Right? Justified?" and paying attention to the effect of their choices, Gambino said.

New connections. Eric Martin of the California Institute of the Arts (Cal Arts) in Valencia, sees a new connection being formed among the various arts media through the computer. He also regards the interactivity of HyperCard as a significant development for designers.

"Since it's all in one digital language now, the interaction between image, word, motion and sound is much more consequential. So graphic design is connecting with other media in a new and more intimate way," he said.

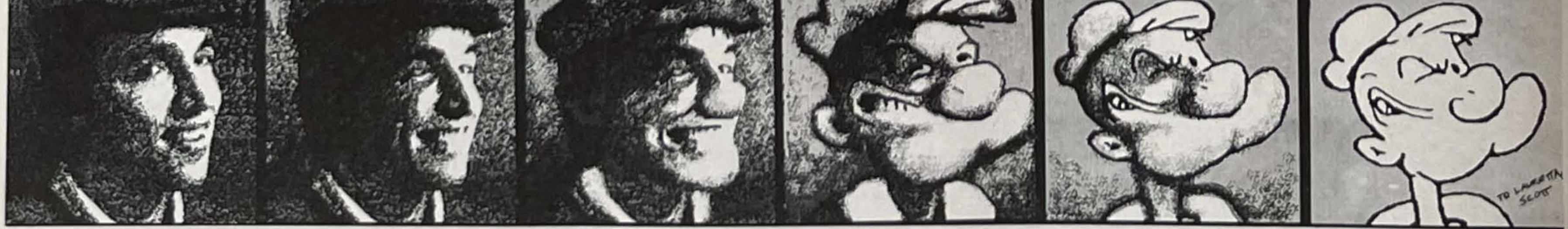
At Cal Arts, art, music, film and video are separate schools. Martin sees artists in all media using a common tool — in this case, the Mac — and talking to one another when they might not have before. "The computer," Martin said, "challenges the separate nature of the disciplines. They're collapsing back again into one common language. It will be interesting to see, not just in design education, but in education in the broadest sense and design in the broadest sense."

Martin teaches his computer courses in the school of art at Cal Arts but finds that about one-third of the students taking his courses are in other disciplines, including lighting and set design students from the school of theater.



NCSU product design students used PixelPaint and Cricket Draw to develop new designs for an athletic shoe manufacturer. Artists (top to bottom) are Randy Wolfe, Pascale Moore, and two by Brian Leonard.

This sequence was created by School of Visual Arts student Scott Franze using Ann Arbor Softworks' FullPaint on a scanned black-and-white photo.



Martin said he is also seeing how artists can create their own tools with HyperCard. With Macs, he said, you can interrelate programs and projects and play through and among them with impunity. And you can create your own environment, especially with HyperCard.

Mixing media. An example of integration of art genres is the work of Mary Benton, now a graduate student in graphic design at the Rhode Island School of Design. All undergraduate students at the school are required to do a degree project in their last year, and an increasing number of them are using computers as their main design tool.

Benton used HyperCard and VideoWorks from MacroMind to create a children's hypertext book, utilizing animation to move through still images and text in a nonlinear progression. Because of her project, she took animation classes to supplement her design background.

As barriers break down between disciplines, the computer in the design classroom is also changing the nature of the student-teacher relationship.

Bob Schaff, director of computer education at the Art Center College of Design in Pasadena, Calif., said that due to the relatively small student body at the Art Center (1,000 students, 100 faculty), the interaction between students and faculty has always been "intimate, close and exacting."

"Now," he said, "it's sort of baby makes three because so much is in [the computer]. The instructor or professional designer can no longer fail to acknowledge that a substantial contribution to the end product may have come from [the computer] in the form of fonts, clip art, stored work, data and random deviations selected by a user."

"The Mac is taking off, particularly in graphic design and in schools that teach graphic designers, for a couple reasons," said Rodney Stock, who founded the San Francisco-based Computer Arts Institute three years ago. "It's an easy machine to work with and has some sophistication with high resolution, which a graphic designer's eye is sensitive to. It addresses high resolution in a way that other machines don't. And it's easier to operate."

What the Mac offers. Lauretta Jones, director of undergraduate computer studies at the School of Visual Arts and a longtime graphic artist and illustrator, said: "In graphic design, one of the most important things you're dealing with is type. And you need good, clean type.

"You could see the promise in the ImageWriter. But when the Mac moved to the LaserWriter, that was when it began to be real. Having 72 dots per inch on screen was really useful for a graphic designer because the measurement we use — the points in the pica system — is 72 points per inch.

"It was also useful having square pixels instead of fuzzy bricks. And WYSIWYAG — what you see is what you almost get. And being able to print out laserprints and go to Linotronic. (This significant step gave graphic designers the quality product they needed for reproduction.) That's when I noticed graphic designers, who cared less about computers and more about graphic design and maintaining their competitive nature, coming to class."

When asked whether the Cal Arts school of art had any non-Mac computers, Martin uttered an emphatic no. "Our people have little or no patience for arbitrary commands," he said.

The Mac has also been adopted in many design studios. Isaac Kerlow, director of computer graphics at New York's Pratt Institute, said, "A lot of companies are using computer graphics, and the marketplace for Macs is really growing. I'd say that three out of five are 'Macintoshizing' their work environment."

Teaching professionalism. The Pratt Institute makes professional experience available to its students by arranging internships at computer graphics houses in the New York area.

Kerlow co-authored "Computer Graphics for Designers and Artists" with Judson Rosebush (van Nostrand Reinhold, 1986; currently in its third printing), which is used as a text in introductory computer graphics courses. Kerlow has another book in the works, "Handbook of Contemporary Design."

Using a Mac II, HyperCard and CD-ROM, designers and faculty at the Pratt Institute have created an interactive version of Josef Alber's landmark book "Interaction of Color." The project's co-producers were Jerry Whiteley and Andrew Phelan, dean of academic affairs, along with Kerlow and a team of Pratt graduate students, plus technical and financial support from Apple.

"We re-created the color studies in the original book and created 2,000 variations of those studies for the computer," Whiteley said. "They were created at New York Institute of Technology and converted into the Mac environment, stored on CD-ROM and called up with narration and music in sync."

The exercises show, for instance, how to make two different colors look like one color or how to make one color look like two different ones. "Interaction of Color" previewed at New York's Guggenheim Museum and is being used this fall as part of the introductory color courses at Pratt, Carnegie-Mellon and Yale (see MacWEEK, May 17).

Last spring, Karrie Finkel's product design students at North Carolina State University's school of design helped to create a line of shoes for Nashville-based Mitre, an athletic footwear division of Genesco.

Ian Whatley, Mitre's product development director, met with the students and gave them a design proposal as if he were a client. The task was to design a line of performance footwear. The proposal contained a provision for the student designers to be compensated for ideas adopted by Mitre.

Whatley, a bioengineer, explained some of the basics of biomechanics and then sent the students several hundred pounds of old shoes and catalogs to cut up.

Denise Pace, a junior who worked on designing an earth-tone running shoe, described how the students made use of the Macintosh. "First, we drew designs on paper,

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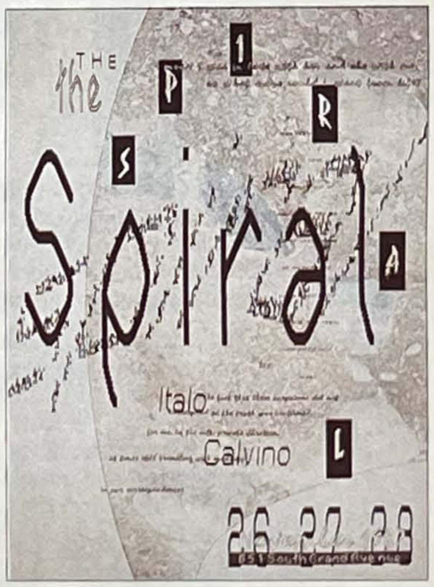

The posters above were designed by California Institute of the Arts students using PageMaker, Cricket Draw and paint programs. "Sign Language" was created by Charles Field; "Spiral" poster designers were Charles Field (left) and Deborah Brochstein (right).

This SuperPaint portrait was created for a life drawing class at School of Visual Arts in New York.

Continued from previous page

then digitized them (using MacTablet) onto the Mac II. We worked on texture and pattern and color, doing mock-ups on the computer, using PixelPaint (SuperMac) and Cricket Draw (Cricket Software). You can chop pieces off the heel, for instance, zoom up and show detail."

Pace used PixelPaint to control the value and hue of colors. But when she was drawing in eyelets and needed them to slant in a certain way to accommodate shoelaces, she switched to Cricket Draw, which allowed her to rotate and tilt the image onscreen to get just the slant she wanted. Then she transferred the image to PixelPaint.

Both students and Whatley said they found excitement in this project. Whatley said he sees two main benefits for Mitre. "First, the students are unblinkered. They have a freshness of thinking."

He said he wondered, for example, why a student's prototype child's shoe had three clear plastic tubes on the heel. Because, explained the student, when the child runs or rides his bike, the wind will whistle through the tubes, creating three different tones.

"Now," Whatley said, "that's an example of freshness of thinking. We may not produce it exactly, but we may incorporate some of that into our design line. The second advantage is that we're a growing company and we may hire some of these students some day. We might find the world's finest shoe designers."

More advanced design. Building on already-developed design skills of advanced students and professionals alike, Platt College in San Diego offers a program in computer graphics and design. The program was established a year ago by Jack Davis, graphics editor of Verbum magazine and formerly an art director with Angel Studios.

A prerequisite for any course is a background in graphic design and a portfolio, although no computer experience is required. From that baseline, students learn computer skills at 16 Mac workstations (with 5 Mbytes of RAM and 100-Mbyte hard disks) that have 19-inch Mitsubishi monitors.

"Our emphasis," said Davis, "is on the communications problem-solving process with those who already know the design process."

With a focus on quality camera-ready art, students use programs like Illustrator 88 from Adobe and PageMaker 3.0 from Aldus. They use Letraset USA's ImageStudio for photo retouching and PixelPaint for producing two-dimensional and 3-D package comps, as well as mocking up logo designs. Silicon Beach's SuperPaint is used in the introductory classes on bit-mapped and object-oriented graphics. For presentation graphics, Platt has Cricket Presents, and Swivel from Paracomp is available for 3-D imagery.

One of the student projects was the creation of packaging mock-ups. Students could choose existing products, like a milk carton, perfume, champagne, sunglasses or cat food, or create new ones. A full-color photograph was digitized on a Sharp scanner. Artwork for the package front was created with Illustrator 88. The art was then brought into PixelPaint to be colored and combined with the photograph. A computerized 3-D mock-up showing the product on a store shelf was created from the combined images.

The Computer Arts Institute's Rodney Stock shares the same concern for professional training. After developing the hardware for the world's first commercial paint system, the AVA 1, Stock realized that the next real need in the graphics industry would be for computer training and founded CAI.

The computer used in many of CAI's courses is the Mac II. Stock said that the demand for Mac-proficient graphic designers exceeds the supply. CAI courses include four-month semesters for the "career-minded trainee" and custom-designed courses and seminars for experienced graphic designers.

"People aren't going to hire you simply because you know how to operate a piece of equipment," Stock said. "They're hiring you because you know how to get a job done using the piece of equipment."

Comparing commercial design to "brightly colored objects bobbing over a baby's crib," Stock said that "the computer gives you more control over those objects than any other tool we've had at our disposal. However, without a good operator, these machines are basically iron and sand."

Verbum's Davis likes to compare computers to cameras. "Some people think that just because they have a camera, they are photographers. Just because you have a computer and a page-layout program doesn't mean that you're a designer." ☐

Susan Katz is a journalist and playwright in North Carolina whose column "Home Tech" appears in the Raleigh Spectator.

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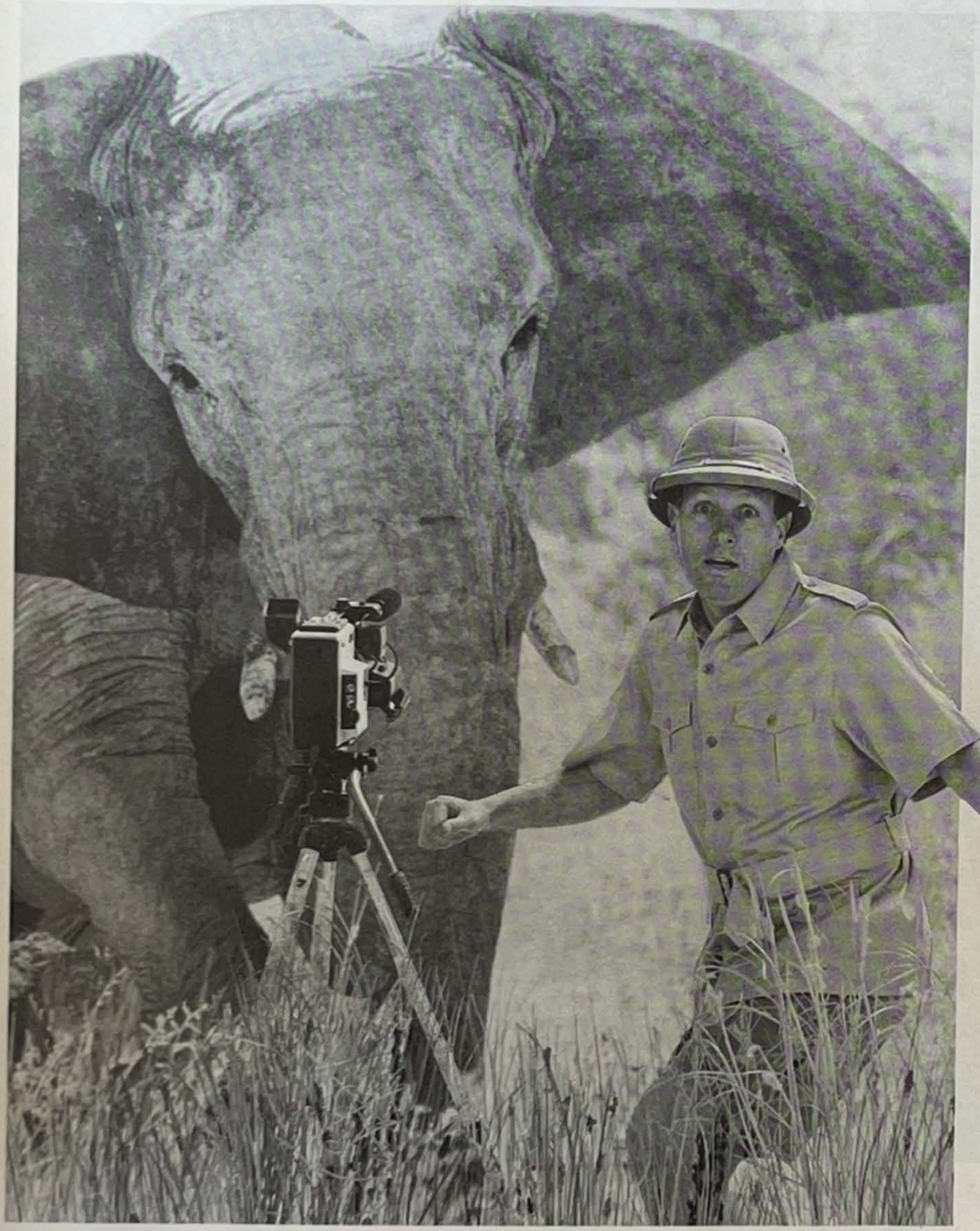

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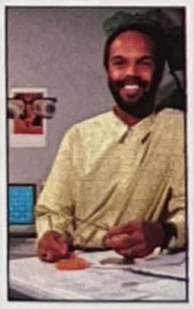
Michael Stevenson, Designer
PixelPaint User



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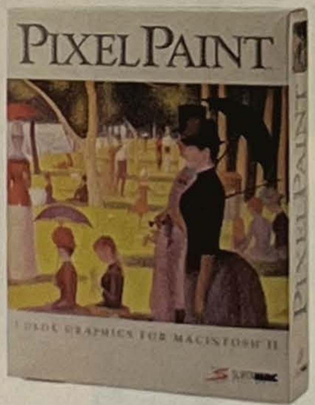

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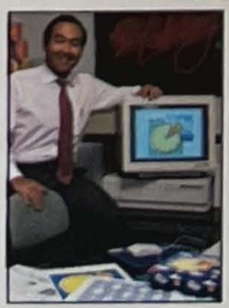

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KNVB's Macs go video

BY JAMIE KRUTZ

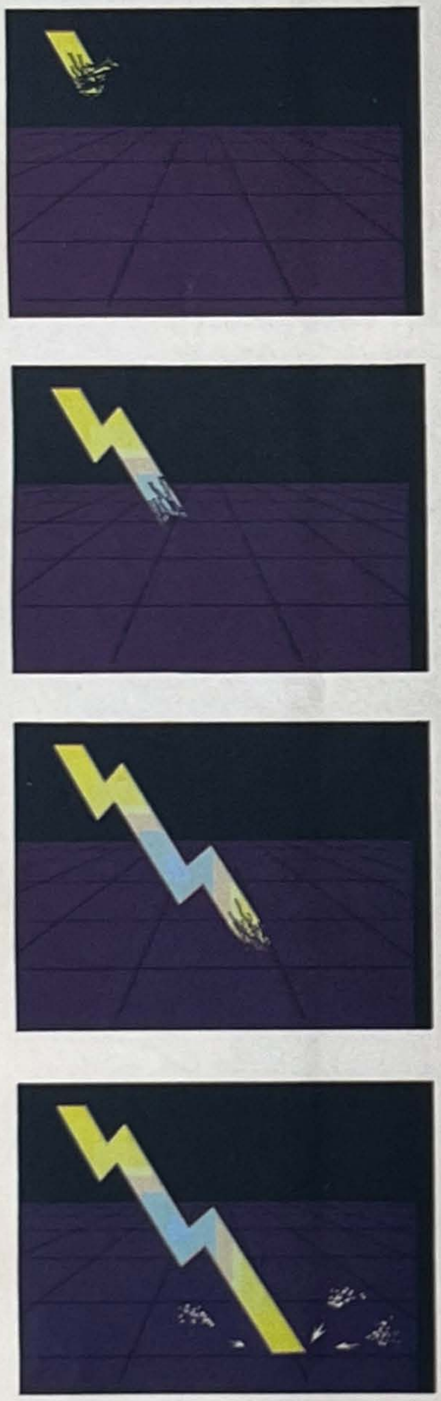

Figure (series) 1.
Lightning strikes in Karp, Newton, Van Brunt's desktop video animation, done with MacroMind's VideoWorks II.

This is the year for desktop video, thanks to explorers like advertising agency Karp, Newton, Van Brunt Inc. in New York.

KNVB, which calls itself "a Mac shop," began using a single Macintosh in the summer of 1986 for desktop publishing. It now has 20 Macs, including five Mac IIs, and does 80 to 90 percent of its work on Macs, according to CEO Gordon Haight. The agency has 20 staff members in-house, including 10 artists, and an off-site services division to give corporate clients an "instant desktop department."

KNVB branched into desktop video last February, with a Commodore Amiga. However, according to Susan Goldin, KNVB vice president, by April, desktop video support for the Mac had grown enough for KNVB to turn to the Mac II. The principals decided to create a video demo showing off the Mac II and desktop video. The project was done for three reasons: to prove to the agency that desktop video on the Mac was feasible; to create a sales tool for promoting KNVB's use of desktop video; and to provide a vehicle for technical exploration of what the available hardware and software could do.

The video project was spearheaded by Tom Beaver, creative director for the agency's video division. He used a Mac II with 5 Mbytes of RAM, two floppy disks, a 140-Mbyte hard drive, an Apple RGB monitor, a Sony NTSC monitor and Computer Friends TV Producer Professional genlock/encoder. Scans were done with a Sharp JX-450 color scanner. Software included MacroMind Inc.'s VideoWorks II, a beta version of MacroMind's Accelerator, SuperMac's PixelPaint, Illustrator 88 from Adobe and a beta version of Paracomp's Swivel 3D.

Here's what you see on the first half of the video.

The title screen, "KNVB Desktop Video, The Demo," comes up to the beat of aerobics-type music. The title screen fades and a 20 second-segment of 2-D and 3-D animation flies by. Next, a monochrome perspective grid, a flowing surface that stretches to infinity, moves toward you. The announcer speaks and monochrome words fly at you over the grid. You learn that flip charts and overheads are things of the past.

A spinning 3-D triangle approaches you. It explodes and the grid turns to color. Then, a lightning bolt strikes the grid (see Figure 1). The camera tilts up into blackness and more words tell you that desktop video is on its way. From the top of the blackness, the grid descends. You now seem to be under a vast ceiling that tilts into a wall. The wall moves to the left, and there, on one of the squares of the grid, is the KNVB logo. The logo centers and the entire wall, logo and all, zooms toward you … twice.

Then a Mac II sails into the square and overlaps the surrounding tiles slightly. Tiles pop off the screen. The background dissolves to yellow. Script pages stack up next to the Mac and slide away to reveal a videocassette, which zooms away as well. A computer disk takes its place. The view changes from the front to the back of the disk. The disk door opens. The disk's hub spins, the door closes and the front view of the disk comes back. As all of this happens, the announcer proclaims the advantages of desktop video.

The main body of the video continues with graphics that capture the four areas of desktop video KNVB is promoting: Slideshow, 2-D animation, 3-D animation and Animation Plus.

The following steps describe the techniques used in the video, which is more than four minutes long and consists of several dozen animated segments.

❶ Beaver created story boards of the video with paper and pencil. The opening montage, consisting of quick clips from animations used in the body of the demo, led into an introductory narration. After the four chosen desktop video areas were showcased, a fifth section, Original Computer Art, showed some PixelPaint still art, and a brief narration concluded the tape.

❷ The script, a collaboration by Beaver, agency president Karl Van Brunt and Haight, went through many revisions. After initially planning to have narration through most of the video, the team decided to emphasize the graphics and let them speak for themselves.

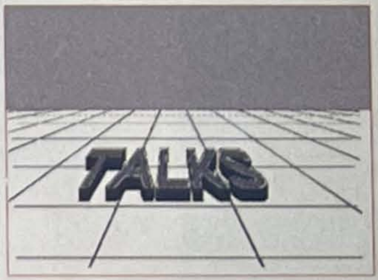

Figure 2.

❸ After the opening montage, the narrated introduction begins. You see the angular monochromatic grid with horizontal lines that move toward you. The grid was created in VideoWorks II, using the QuickDraw Line feature, a graphic mode Beaver said uses processor time efficiently. It generates the lines algorithmically instead of moving a bit-mapped line. A small segment of the moving lines was created and looped back-to-back to create the illusion of a series of horizontal lines moving from the distant horizon to the foreground.

❹ In touting the advantages of desktop video, the announcer says, "... the world of business presentations can be a dry one." Monochrome words describing old types of presentations fly toward the camera through various trajectories over the moving grid (see Figure 2). The announcer's voice was added in the final editing stage.

Artwork for this sequence and most that follow was done in PixelPaint and imported as "cast members" into VideoWorks II. Cast members are objects that can be moved around and animated on the "stage window" screen. VideoWorks II will record the motions into a score for quick and easy two-dimensional animation.

Text was also created in PixelPaint with imported fonts that Beaver enhanced. This technique was used throughout the video to create 3-D-like fonts with colors, shading and artistic touches not available in VideoWorks II. The text was also imported into VideoWorks II as cast members.

Beaver didn't use VideoWorks II's text box for text entry since letters are generated on white rectangles which can't be eliminated. A spokesperson for MacroMind said that working in VideoWorks II's paint window avoids this problem, but agreed that text origination in PixelPaint is a flexible way to go.

The fonts used were chosen from Adobe fonts and Doubl Click's World Class Fonts I, II and III.

❺ To create the effect of phrases flying toward the camera, Beaver used VideoWorks II's In-betweening feature to make each phrase grow from small to large with a slight vertical motion. With a beginning and ending position for an object and the number of frames desired, the program animates the object between the two points.

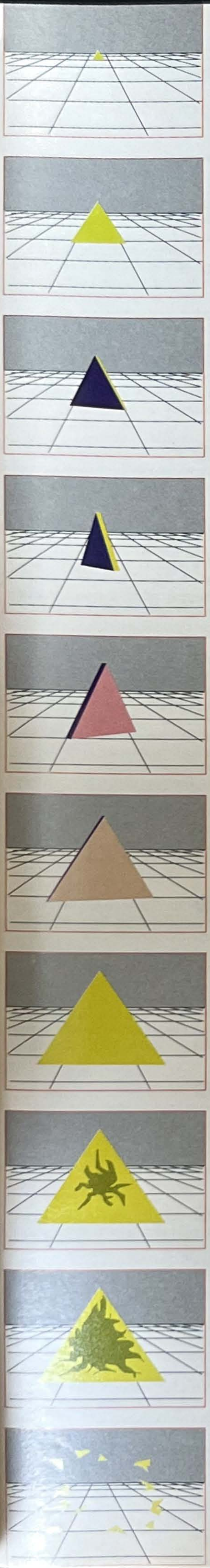

Figure (series) 3.

❻ Enough frames were generated with Swivel 3D to make a 3-D triangle zoom toward the camera over the grid and do a rotation. While Beaver worked primarily with PixelPaint and VideoWorks II, freelance artist and Swivel 3D beta tester Bill Lombardo generated the simple 3-D sequences. Although Beaver wanted a gradual color change to simulate the effect of the triangle moving in relation to the program's single light source, he said the beta version of Swivel produced abrupt color changes instead.

❼ Flipping through the Swivel-generated frames created the triangle's zooming forward and rotating. The Swivel frames were imported into VideoWorks II and animated using cel animation. VideoWorks II lets you assign many cast members to a single on-screen object, and the program can flip through the images to give the object complex motion. The cel animation can be looped to show a repetitive motion, and the looping animation can be moved around the screen like any other cast member.

❽ As the announcer says, "There is a way to give any method impact," the triangle explodes and the grid becomes colorized. For this, Beaver used PixelPaint to draw four frames showing the expanding stages of the explosion. He added them to the end of the triangle cel animation sequence (see Figure 3).

❾ Sailing in the Mac II was made possible by bringing a gray-scale scan of a Mac II into PixelPaint and inserting a color picture onto its screen. From there, it was brought into VideoWorks II as a large image, so as not to lose resolution.

In-betweening was used to zoom the Mac from infinity to the point where it was slightly larger than a black square in a gray tile wall background. Assigning the Mac picture to a higher track number in the VideoWorks II score made it the foreground image.

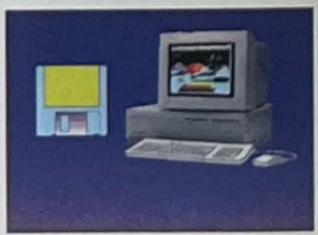

Figure 4.

❿ Still in that sequence, a computer disk is shown next to the Mac (see Figure 4). The computer disk has several elements, including the two sides of the floppy disk itself, the disk's door, the little chrome hub and the label. The front and the back of the disk are two separate cast members, and Beaver used a wipe to change between them. To make the door slide, Beaver laid the door in place on top of the floppy disk and used in-betweens to make it move left, then right. While the door was open, the hub was spun using a seven-frame cel animation that was looped and played three times. The new year, 1989, was flown in from the right, replacing 1988 on the disk's label.

⓫ As Beaver worked on the next animation, a simple slide with animated text, (see Figure 5) he wanted a gradient fill from PixelPaint as background. VideoWorks II defaults to the Macintosh system palette, which Beaver describes as "a bizarre arrangement of colors," because the palette is not organized in a logical way. For VideoWorks II to use the PixelPaint gradient's palette, Beaver used a public domain program called Klutz.

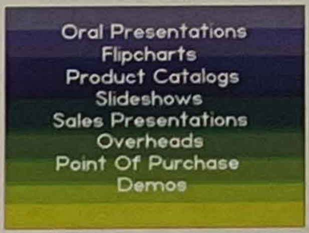

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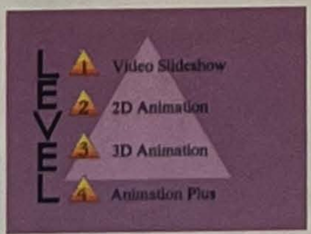
Figure 5.



LEVEL
1 Video Slideshow
2 2D Animation
3 3D Animation
4 Animation Plus

Figure 6.

⓬ The screen in Figure 6, listing the four types of presentations, was animated with a combination of in-betweening and cel animation. It is repeated at the beginning of each of those four sections that follow.

⓭ The first three sections, video slideshow, 2-D animation, and 3-D animation, showed the same graphics with different treatments.

A bar chart first shown as a still slide in the slide-show section has its bars animated to grow to full height with a VideoWorks II wipe effect in the 2-D section. In the 3-D demonstration, the bars were generated in Swivel 3D, brought into VideoWorks II and cel animated to rotate in from the right over the PixelPaint background. According to Beaver, the animations that work best on the Mac are simple two-dimensional effects. He said that he likes the elegance and ease of use of VideoWorks II to produce them (see Figure 7).

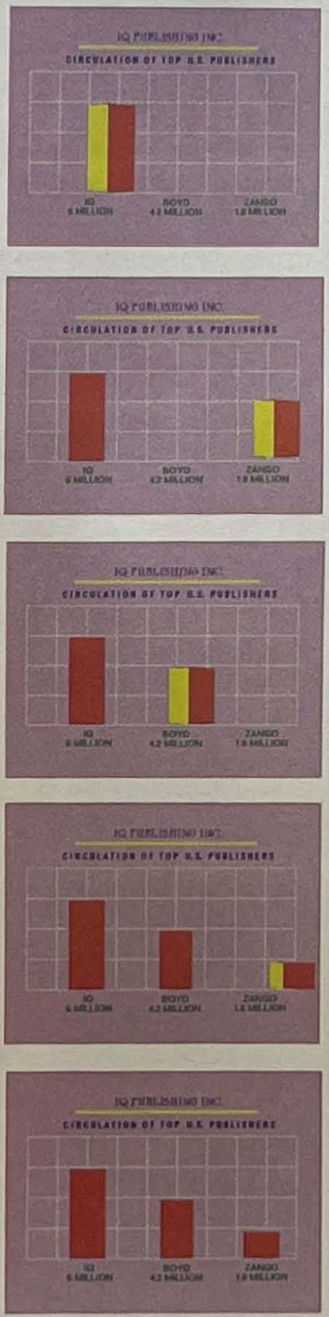


Figure (series) 7.

A lightning bolt strikes the grid. The camera tilts up into the blackness and more words tell you that desktop video is on its way.

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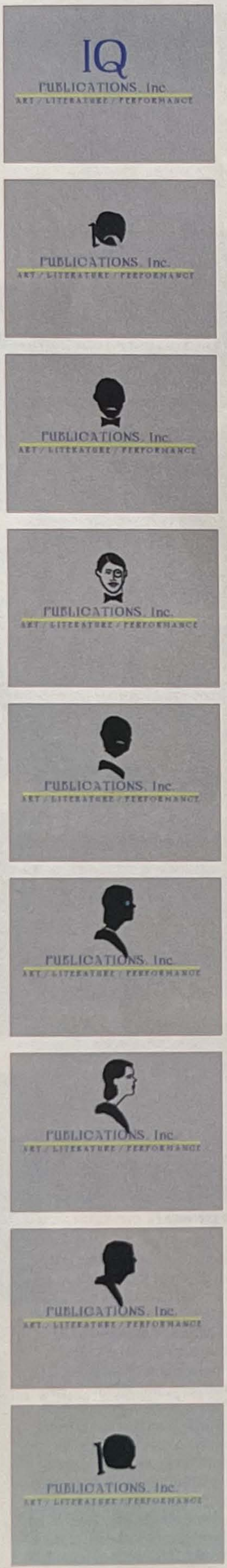


Figure (series) 8.

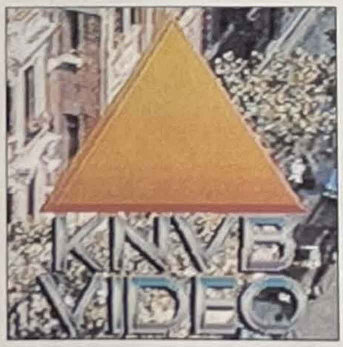
Continued from previous page

⑭ One of the most fascinating 3-D effects was a cel animation generated with Adobe Illustrator 88 by freelance artist Erik Slavin. Illustrator's Smooth function was used to gradually change or "morph" one vector object into another. (The terms metamorphosing and morphing refer to that gradual changing of one shape into another.) The letters IQ were morphed into a front-facing male face, which was morphed into a side view of a female head and shoulders, which was morphed back into the letters IQ (see Figure 8).

Usually in-betweening, or tweening, means the same as morphing. However, what VideoWorks II calls in-betweening is limited to changing the position on the screen, the size, the aspect ratio and the two-dimensional orientation of a cast member. It will not automatically tween or morph, but will play back a tweened sequence created elsewhere using its cel animation capability.

Beaver said that while Illustrator generates morphing frames quickly in its preview mode, all the frames end up stacked on top of one another. You have to separate them and do a screen dump to get bit-mapped images for use in VideoWorks II. Once there, each image was assigned as a cast member for cel animation.

⑮ The Animation Plus section features animations keyed over both video and scanned art (see Figure 9). Swivel 3D played a part for one of the animations keyed over video. A triangle spins 180 degrees on the Z axis while moving toward the camera. After the animated frames were generated in Swivel 3D, Beaver brought them into VideoWorks II and cel animated them in sequence. Computer Friends hardware and software were used to key the graphic over video, replacing the background color in VideoWorks II with footage from a source 3/4-inch deck.



BILL LOMBARDO

Figure 9.

⑯ 16. A clever animation of simple artistic shapes created in PixelPaint and animated with in-betweening in VideoWorks II leads into a brief section on Original Computer Art. This last section featured three PixelPaint images.

⑰ 17. The video concludes with a brief narrated segment. A KNVB video triangle logo slides into view over the previously seen moving perspective grid. The words exit left and right, and the triangle tilts back and flies away. Its speed decreases as it gets farther away. Suddenly it shoots straight up and out of the frame (see Figure 10).

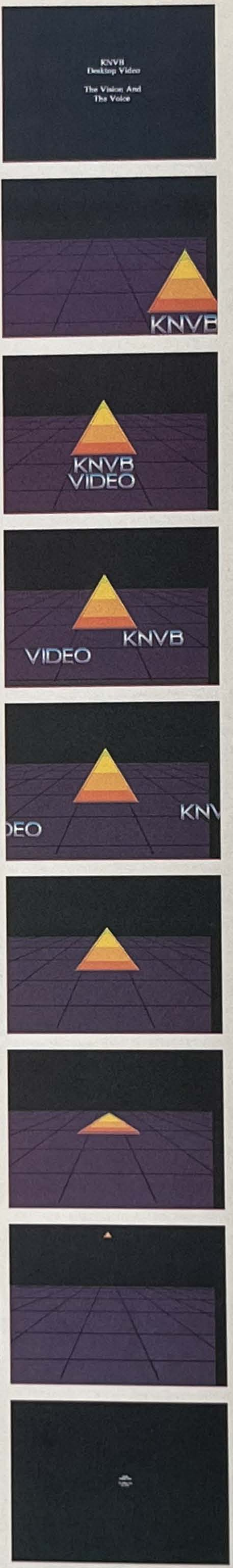


Figure (series) 10.

The triangle tilt consisted of a series of frames that Beaver created in PixelPaint to give a 3-D illusion. They were cel-animated, and several in-betweening segments were used to slow the apparent speed of the triangle as it zipped into the distance to simulate real motion. He said that he would like VideoWorks II to offer a speed algorithm to chart speed changes over a curve.

⑱ VideoWorks II lets you have many cast members moving around at once, although if each successive frame differs too much from the previous one, the program will slow down. Beaver said that if there are a lot of algorithmic calculations, such as movements of lines when VideoWorks II is calculating in-betweens, the program has to make the calculations every time it plays, which can slow it down.

The solution: MacroMind's program called Accelerator, which takes animations, draws and saves each frame, and compresses the frames with a delta-compression technique. It then page-flips the whole screen to play back complex animations smoothly at up to 60 frames per second.

The smoothness, however, does not come without a price. A 50-Kbyte VideoWorks document can become a 2.5-Mbyte Accelerator document. Ninety percent of the project required Accelerator.

⑲ After the segments were completed, Beaver put them onto videotape. Computer Friends hardware and software was used to interface the Mac II simultaneously to a 3/4-inch video player and a portable 3/4-inch video recorder so animations could be keyed over previously shot video. Background video footage was provided by Michael Posener.

⑳ Beaver used a temporary soundtrack of music from a commercial album. Plans are to replace it with either a music library or original music for which the rights have been purchased.

㉑ Once the graphics were transferred to videotape and the narration recorded, final editing was done at Electronic Visions Inc. in New York. This involved arranging the graphics segments in the right order and adding the narration and music onto a master 3/4-inch videotape.

The video took 200 to 250 hours to complete, which includes the time spent exploring the capabilities of the hardware and software. Beaver said he could now do a similar project in half the time.

Jamie Krutz is a video composer, director and editor living in Colorado.

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Figure 9.

⑯ 16. A clever animation of simple artistic shapes created in PixelPaint and animated with in-betweening in VideoWorks II leads into a brief section on Original Computer Art. This last section featured three PixelPaint images.

recorded, final editing was done at Electronic Visions Inc. in New York. This involved arranging the graphics segments in the right order and adding the narration and music onto a master 3/4-inch videotape.

The video took 200 to 250 hours to complete, which includes the time spent exploring the capabilities of the hardware and software. Beaver said he could now do a simi-

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Now showing: desktop video

As is typical of this crazy, high-tech world, the desktop is changing, moving, advancing. Part of that advancement is in desktop video.

When the Commodore Amiga was introduced in 1985, there was a lot of hoopla about its video capabilities. On the back of the box is a port that outputs the same kind of video as your VCR at up to 744-by-480-pixel resolution with 16 colors, or up to 374-by-480-pixel resolution with 4,096 colors. This built-in capability to record your computer screen to videotape was unprecedented on a personal computer, and it was a great idea. However, the first software was limited, and the Amiga was yet another new computer with a small user base.

Things are changing again, with the Amiga gaining in popularity partly because of its video capabilities.

With its 256-color, high-resolution capabilities, the Mac II is an excellent desktop video machine as well. Add-in graphics boards offering more colors and higher resolutions make it even more viable. Mac developers are creating and improving desktop video applications, and some significant Amiga developers, sensing a large and hungry new market, are porting their next-generation video software to the Mac II.

Desktop video is here now. It consists of using a personal computer to create elements of a video production. These elements include pictures, animations, text, sound effects and music.

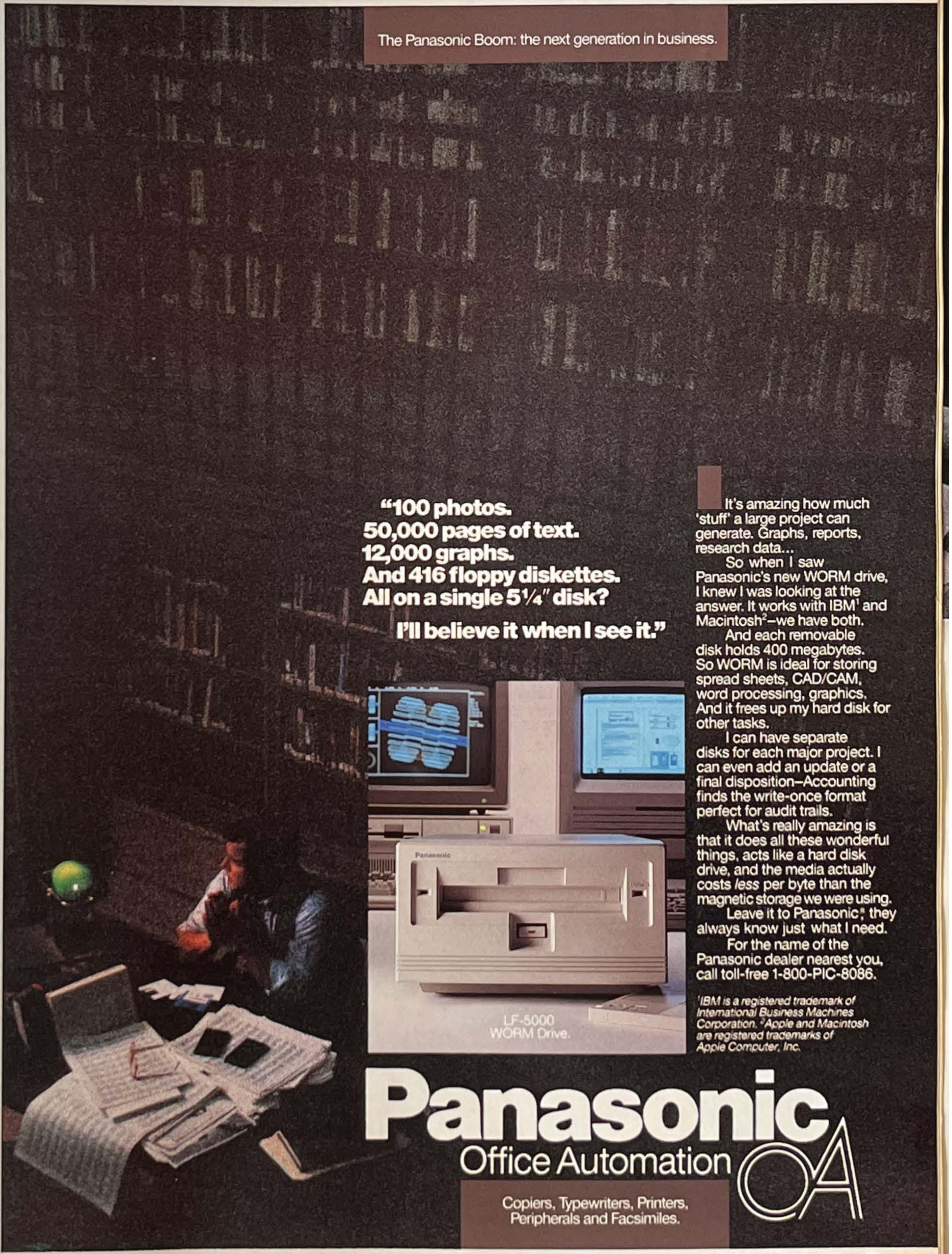
You can create and show simple presentations right on the computer screen or, with a red-green-blue signal to an NTSC standard video encoder on the Mac II, copy them straight to videotape. Elements for more complex videos will have to be edited together, using the computer, one or more video decks and, possibly, a pile of expensive video effects boxes and ancillary equipment at a costly post-production suite. This can set you back between $50 and $500 per hour, depending on how much of high-tech video editing equipment you need.

Why use video? VCRs are widespread in homes and businesses. A videocassette is an easily carried sales tool, image maker, teacher, entertainer and idea presenter. You can duplicate it and send copies around the world or down the street cheaply and easily.

Color, lighting, music, action, text, narration, camera angles and framing all can be used to send a message and all are simultaneously available.

For video production, the home VHS, Beta or 8mm VCRs are akin to a dot-matrix printer. They offer only adequate quality, with limited editing capabilities. Industrial 3/4-inch and the new Super VHS and ED Beta VCRs have increased quality, much like going from a dot-matrix to a laser printer. The quality is good, but the experienced eye can still see the telltale signs. On the high end, Betacam, M2, 1-inch, D2 and D1 VTRs, in a debatable order of ascending quality, are the current "Linotronics" of desktop video.

Desktop video allows for more creative control, savings of time and money, quicker revisions and updates, and inevitably the same potential for either inspired personal creativity or abject aesthetic abuse as in any other creative endeavor. Like desktop publishing before it, desktop video is growing up. — By Jamie Krutz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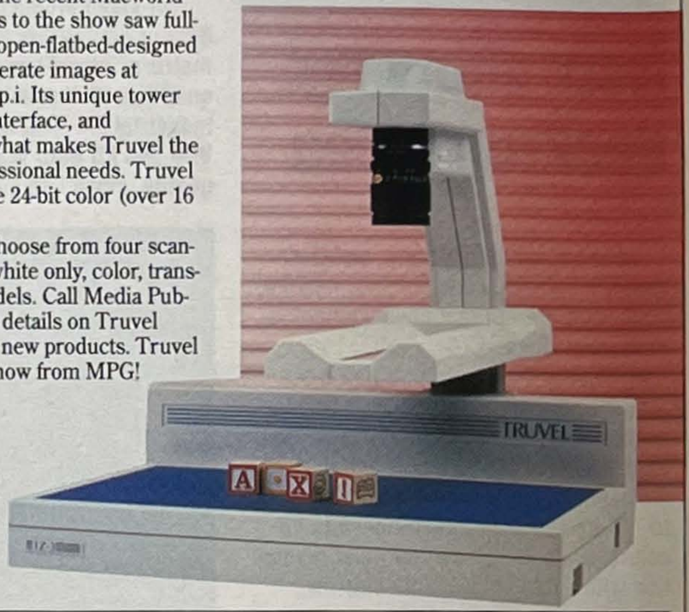

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Photo-Mac: It's in a class by itself

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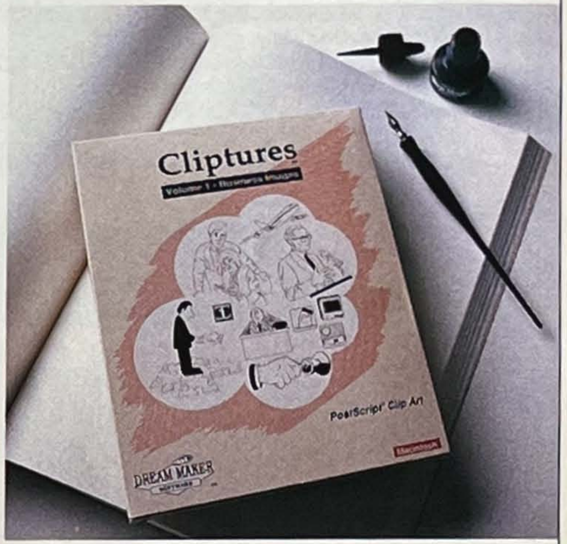

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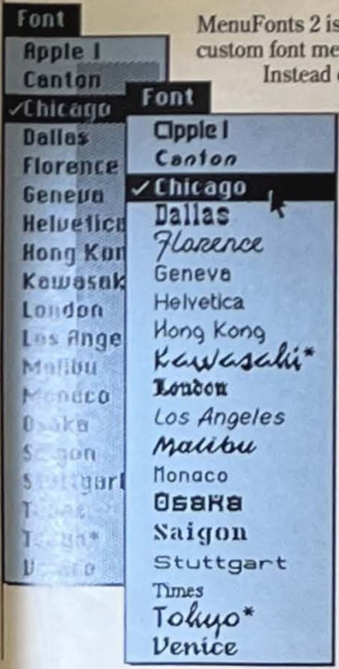

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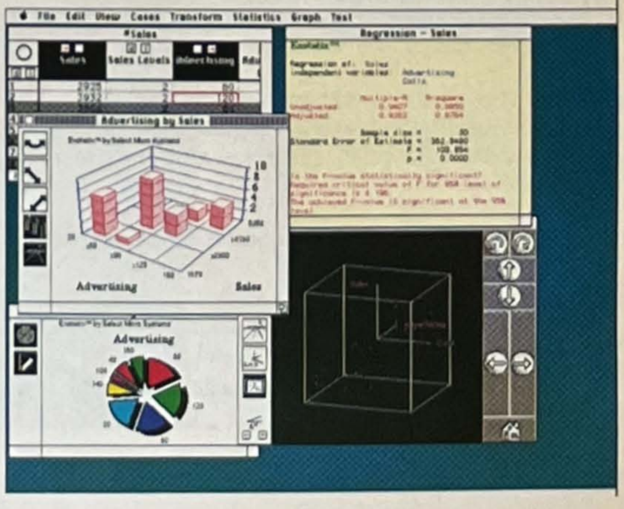

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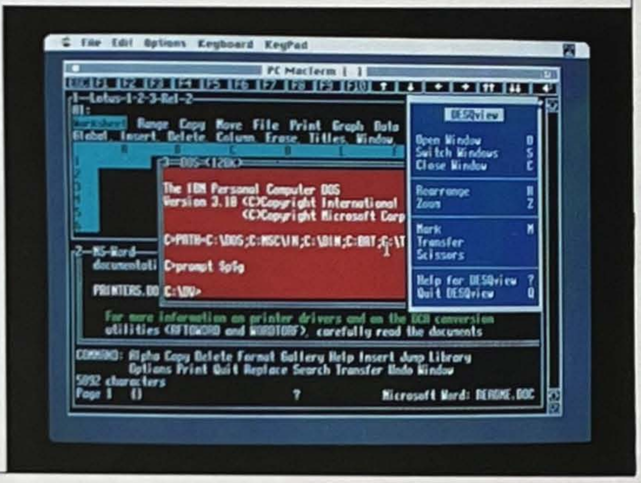
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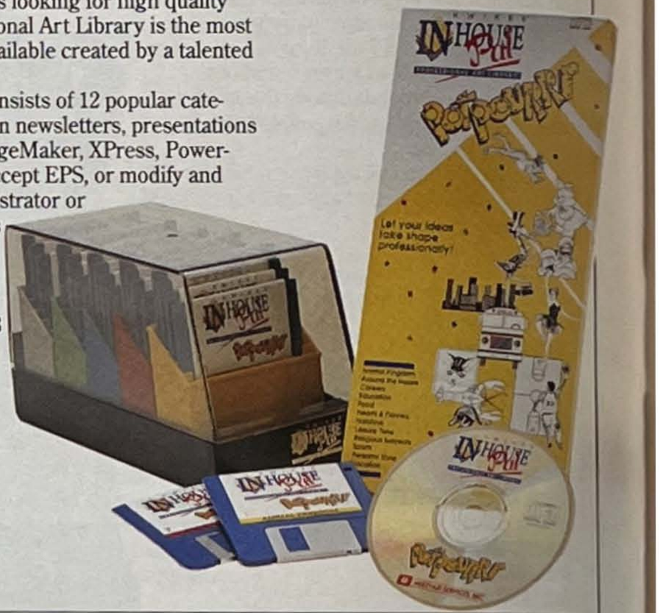

Multi-Ad Services, Inc.
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Peoria, Ill. 61615
Toll free: (800) 447-1950
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MacWEEK's showcase is an exceptional way to make the most of an advertising budget. For just $1650, your product is seen three consecutive times in MacWEEK's four-color Showcase.

It's an exceptional advertising value that puts your message before 60,000 qualified professional purchasing prospects — and an additional 170,000 pass-along readers — all eager to maximize their Macintoshes.

To participate in MacWEEK's Showcase, advertisers must submit the following:

- One four-color transparency of the product (35mm slide is ok),
- 75 words of ad copy, which should include a brief headline, address and/or phone number, and
- An insertion order confirming ad dates.

Deadline for all Showcase materials is two weeks before issue date. First-time advertisers must submit full payment ($1650) with materials. Showcase units are non-commissionable.

Frequency discounts do not apply.

Showcase units must be ordered or renewed in flights of three consecutive insertions.

Contact your local MacWEEK sales representative with specific Showcase questions, or submit your materials to:

MacWEEK
525 Brannan Street
San Francisco, Calif. 94107

Each Showcase unit features one photo or piece of artwork. MacWEEK will choose between photographs if more than one is submitted. Copy will be edited by MacWEEK if length exceeds 75 words.

MacWEEK
LATEST
'030 Mac II to kick off 'year of the CPU'
Seybold: The ins and out(put) of publishing

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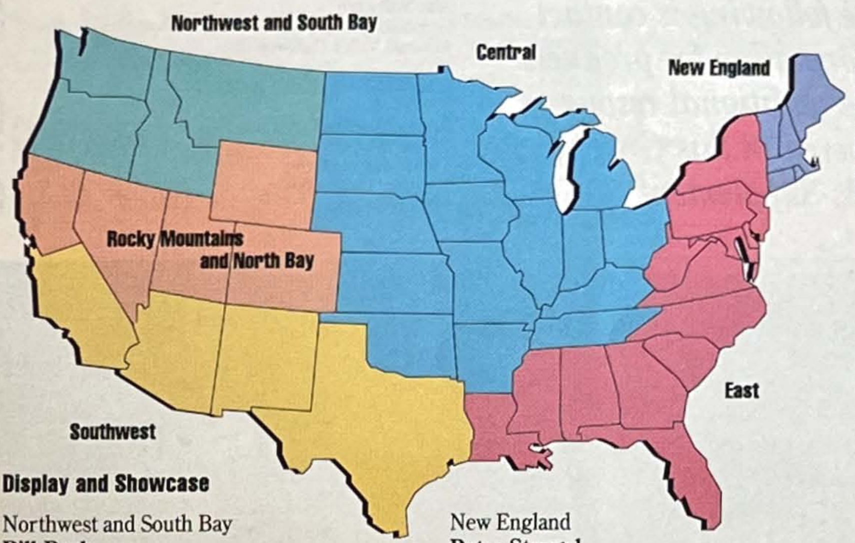
MacWEEK sales offices



MAP COURTESY OF MICROMAPS

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415/541-9659

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Robert Foody
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Don't swipe someone else's GA. Send for your own reference issue. Additional copies of MacWEEK's October 25 GA supplement are available by mail order at the following volume discounts.

1-5 copies	$10.00 each
5-10 copies	8.50 each
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Send check or money order to:
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Graphic Arts Supplement
P. O. Box 5999
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CALL TOLL FREE
800-356-2892
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You will not be charged until order is shipped.
Prices subject to change without notice.

PRODUCT INFORMATION

The following is contact information for products and additional resources covered in this Graphic Arts Supplement.

Aba Software
GraphistPaint II: $495
41 Great Valley Parkway
Malvern, Pa. 19355
(215) 644-3580; (800) 234-0230

Abaton Technology Corp.
FB-300: $1,495
48431 Milmont Drive
Fremont, Calif. 94538
(415) 683-2226

Adobe Systems Inc.
Illustrator 88 (includes Adobe Separator): $495; Publishing Pack #1: Newsletter: $395; #2: Forms and Schedules: $475; #3: Displays and Presentations: $475; Font Downloader included with font
P.O. Box 7900
Mountain View, Calif. 94039
(415) 961-4400

Aldus Corp.
PageMaker 3.0: $595; FreeHand: $495
411 First Ave. S.
Seattle, Wash. 98104
(206) 622-5500

Alsoft Inc.
Font/DA Juggler Plus: $59.95; Master Juggler: $79.95
P.O. Box 927
Spring, Texas 77383-0927
(713) 353-4090

Altsys Corp.
Fontastic Plus 2.01: $99.95; Fontastic Plus fonts: $19.95 to 29.95(bit-map); $59.95 to 79.95 (PostScript); Fontographer: $395
720 Avenue F, Suite 109
Plano, Texas 75074
(214) 424-4888

American Intelliware Corp.
Storyboarder: $495
P.O. Box 6980
Torrance, Calif. 90504
(213) 533-4040

Apple Computer Inc.
HyperCard: $49; ImageWriter II: $595; ImageWriter LQ: $1,399; LaserWriter II NT: $4,999; Laser Writer II NTX: $6,999; AppleTalk card: $139; LocalTalk cable: $75; AppleShare file server: $799; Apple Scanner (bundled with HyperScan and AppleScan): $1,799; Apple IIC: $799; AppleColor Hi-Resolution RGB Monitor (for Mac II): $999; EtherTalk LAN (interface card, additional hardware, software — for Mac II):$699; Mac Plus: $1,799; SE (basic configuration): $3,169; Mac II (basic configuration): $4,868
20525 Mariani Ave.
Cupertino, Calif. 95014
(408) 996-1010

Applied Imagination
The Imaginator: $99.95
64 Morton St., Suite 1B
New York, N.Y. 10014
(212) 645-7199

Art Center School of Design
P.O. Box 7197
Pasadena, Calif. 91109-7197
(818) 584-5000

AST Research Inc.
AST TurboScan: $1,699 (sheet-fed), $1,899 (flatbed); Nu-View: $2,099 (shipping soon)
2121 Alton Ave.
Irvine, Calif. 92714
(714) 863-1333

Atex Publishing Systems
32 Wiggins Ave.
Bedford, Mass. 01730
(617) 275-8300

Autographix Inc.
100 Fifth Ave.
Waltham, Mass. 02154
(617) 890-8558; (800) 548-8558
$12 to $20 per slide
Service centers throughout the United States

Avalon Development Group
PhotoMac (shipping in November): $695
1000 Massachusetts Ave.
Cambridge, Mass. 02138
(617) 661-1405

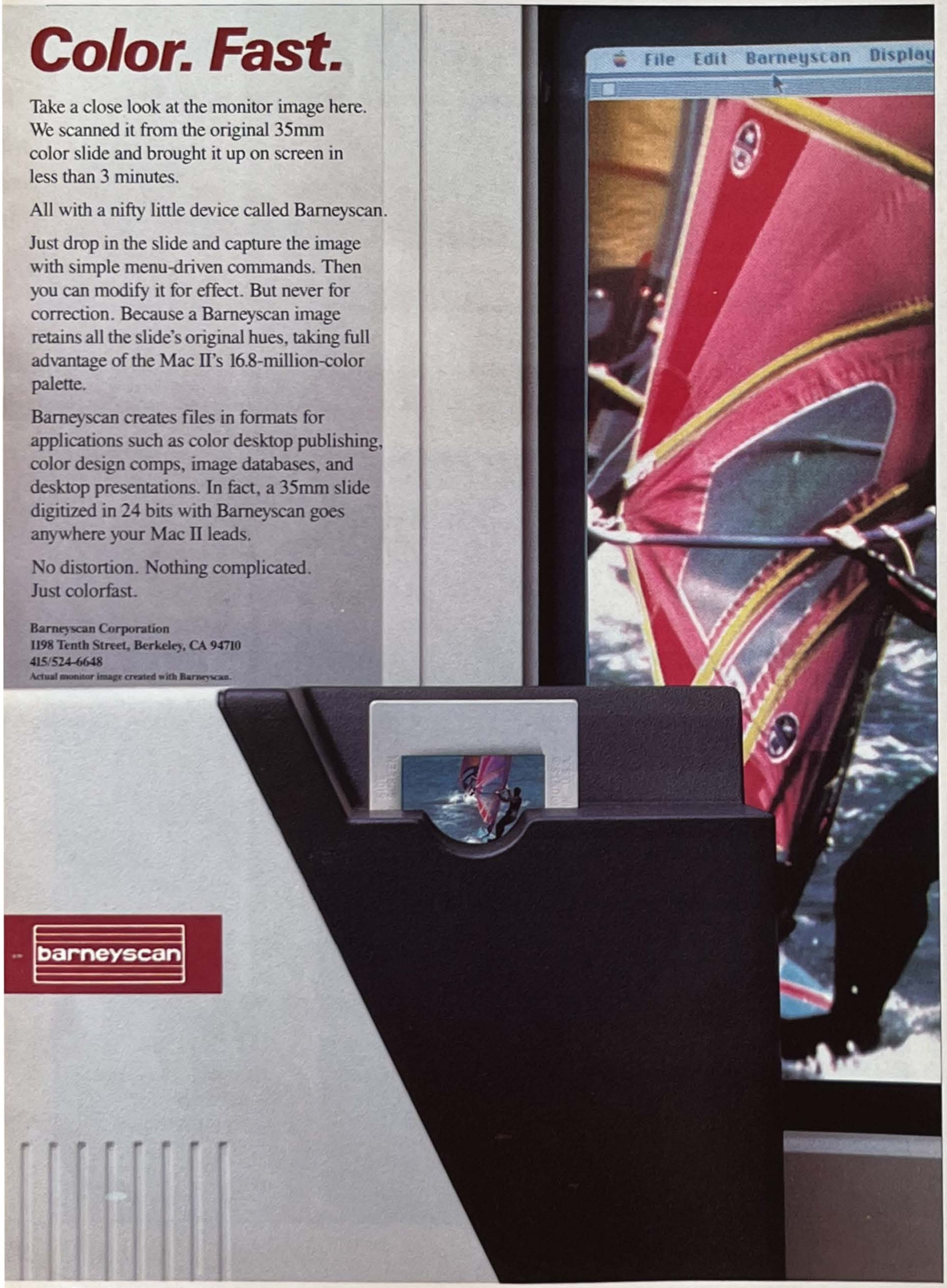
Barneyscan Corp.
BarneyScan: $8,700
1198 10th St.
Berkeley, Calif 94710
(415) 524-6648

Bigelow and Holmes
P.O. Box 1299
Menlo Park, Calif. 94026
(415) 326-8973

Bitstream Inc.
SoftFonts: $195 to $595; MacFontWare: $195 per package
Athenaeum House
215 First St.
Cambridge, Mass. 02142
(617) 497-6222

Business and Professional Software
Graphics Express (scheduled for fall release): less than $150
143 Binney St.
Cambridge, Mass. 02142
(617) 491-3377

Caere Corp.
OmniPage: $795
100 Cooper Court
Los Gatos, Calif. 95030
(408) 395-7000


Color. Fast.

Take a close look at the monitor image here. We scanned it from the original 35mm color slide and brought it up on screen in less than 3 minutes.

All with a nifty little device called Barneyscan.

Just drop in the slide and capture the image with simple menu-driven commands. Then you can modify it for effect. But never for correction. Because a Barneyscan image retains all the slide's original hues, taking full advantage of the Mac II's 16.8-million-color palette.

Barneyscan creates files in formats for applications such as color desktop publishing, color design comps, image databases, and desktop presentations. In fact, a 35mm slide digitized in 24 bits with Barneyscan goes anywhere your Mac II leads.

No distortion. Nothing complicated.
Just colorfast.

Barneyscan Corporation
1198 Tenth Street, Berkeley, CA 94710
415/524-6648
Actual monitor image created with Barneyscan.

PRODUCT INFORMATION

California Institute of the Arts
24700 McBean Parkway
Valencia, Calif. 91355
(805) 255-1050

CGI Inc.
268 Summer St.
Boston, Mass. 02210
(617) 542-6076

Claris Corp.
MacDraw II: $395; MacPaint 2.0: $125; ClarisCAD (shipping at end of year): $795
440 Clyde Ave.
Mountain View, Calif. 94043
(800) 334-3535; (800) 668-8948 in Canada

Commodore Business Machines
Amiga system: approximately $5,000 (includes Amiga 2000, hard disk, 2-Mbyte RAM expansion, color monitor, genlock, software)
1200 Wilson Drive
West Chester, Pa. 19380
(215) 436-4200

Compatible Systems Engineering
7630 Little River Turnpike, Suite 216
Annandale, Va. 22003
(703) 941-0917

Compugraphic Corp.
cgType: $149 per volume; cgScript2: $4,995 (for the 9400), $14,995 (for the 9600):
200 Ballardville St.
Wilmington, Mass. 01887
(508) 658-5600

Computer Arts Institute
310 Townsend St.
San Francisco, Calif. 94107
(415) 546-5242

Computer Friends Inc.
ColorFREEZE 24 (for the Mac II): $1,995; TV Producer Professional: $999; RGB Pro: $1,500
14250 N.W. Science Park Drive
Portland, Ore. 97229
(503) 626-2291

Connect Inc.
MacNET: $49.95
10101 Bubb Road
Cupertino, Calif. 95014
(800) 262-2638

Cricket Software
Cricket Draw: $295; Cricket Graph: $195; Cricket Presents...: $495
40 Valley Stream Parkway
Malvern, Pa. 19355
(215) 251-9890

Crosfield Lightspeed Inc.
Lightspeed Color Layout System (Mac II only) software only: $6,000; abbreviated system: $17,000; full system: $39,500
65 Harristown Road
Glen Rock, N.J. 07452
(201) 447-5800

CyberPublishing Inc.
CyberChrome 36A System (extensive hardware/software networked publishing system): $150,000; CyberMerge utility discontinued
P.O. Box 9565
New Haven, Conn. 06536
(203) 786-5151

Data Translations Inc.
ColorCapture (for the Mac II): $2,595; RAM Surcharge: $462
100 Locke Drive
Marlboro, Mass. 01752
(508) 481-3700

Datacopy Corp.
ProScan 730: $1,800; 830: $2,800; 840: $6,800; 840 I: $9,995
1215 Terra Bella Ave.
Mountain View, Calif. 94043
(415) 965-7900

DEST Corp.
2020 Scanner: $2,195 (plus $300 chip-shortage surcharge); PubsPack software: $595; TextPack: $595; PubsPack and TextPack bundle: $895
1201 Cadillac Court
Milpitas, Calif. 95035
(408) 946-7100

Dubl-Click Software
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9316 Deering Ave.,
Chatsworth, Calif. 91311
(818) 700-9525

E-Machines Inc.
Big Picture IQ (with software and interface — Mac II only): $2,795
9305 S.W. Gemini Drive, Beaverton, Ore. 97005
(503) 646-6699

Eisaman, Johns & Laws
6255 Sunset Blvd., Suite. 1400
Los Angeles, Calif. 90028
(213) 469-1234

Electronic Arts
Studio 8: $494.95 (Mac II only)
1820 Gateway Drive
San Mateo, Calif. 94404
(415) 571-7171

Farallon Computing
MacRecorder (includes SoundEdit): $199
2150 Kittredge St.
Berkeley, Calif. 94704
(415) 849-2331

Fifth Generation Systems
Suitcase: $79
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(714) 259-0541

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MacVision®

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Service centers throughout United States

Giovanni Agnelli Foundation
de Italia interactive videodiscs
(call for information)
1616 H St. N.W.
Washington, D.C. 20006
(202) 783-7000

Graphsoft Inc.
MiniCAD 4.0: $495
8370 Court Ave., Suite 202
Ellicott City, Md. 21043
(301) 461-9488

GTCO Corp.
Macintizer: $399
7125 Riverwood Drive
Columbia, Md. 21046
(301) 381-6688

Hell Graphics Systems
25 Harbor Park Drive
Port Washington, N.Y. 11050
(516) 484-3000

Hewlett-Packard Co.
ScanJet 9190: $1,495; PaintJet: $1,395
321 E. Evelyn Ave.
Mountain View, Calif. 94039
(415) 857-1501

Howtek Inc.
ScanMaster (for the Mac II):
$8,195 (with inter-face and
software); PixelMaster for
the Mac in production
21 Park Ave.
Hudson, N.H. 03051
(603) 882-5200

Ideaform Inc.
HyperBook Maker: $59.95
P.O. Box 1540
Fairfield, Iowa 52556
(515) 472-7256

InFocus Systems Inc.
PCViewer: $1,495 to 2,795
7649 S.W. Mohawk
Tualatin, Ore. 97062
(800) 327-7231

Innovative Data Design
MacDraft: $269
2280 Bates Ave.
Concord, Calif. 94520
(415) 680-6818

International Typeface Co.
2 Hammarskjold Plaza
New York, N.Y. 10017
(212) 371-0699

Iris Graphics Inc.
IRIS 3024: $75,000
6 Crosby Drive
Bedford, Mass. 01730
(617) 275-8777

Jordan, McGrath, Case and Taylor
445 Park Ave., Ninth Floor
New York, N.Y. 10022
(212) 326-9100

Karp, Newton, Van Brunt
30 E. 21st St.
New York, N.Y. 10010
(212) 505-2570

Knowledge Engineering
JustText: $195
Lithographer (packaged with
Color System I); call for
more information
115 Mason St.
Greenwich, Conn. 06830
(203) 622-8770

Koala Technologies Inc.
MacVision 2.0: $395
269 Mt. Hermon Road
Scotts Valley, Calif. 95066
(408) 438-0946

Kurta Corp.
Graphics Tablet (serial port)
IS-1 Series 8-1/2 x II: $375; 12 x 12:
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3007 E. Chambers St., Phoenix, Ariz. 85040
(602) 276-5533

LaserWare Inc.
LaserPaint (monochrome): $495;
Color II (Mac II): $595
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San Rafael, Calif. 94915
(415) 453-9500; (800) 367-6898

Raymond Lau
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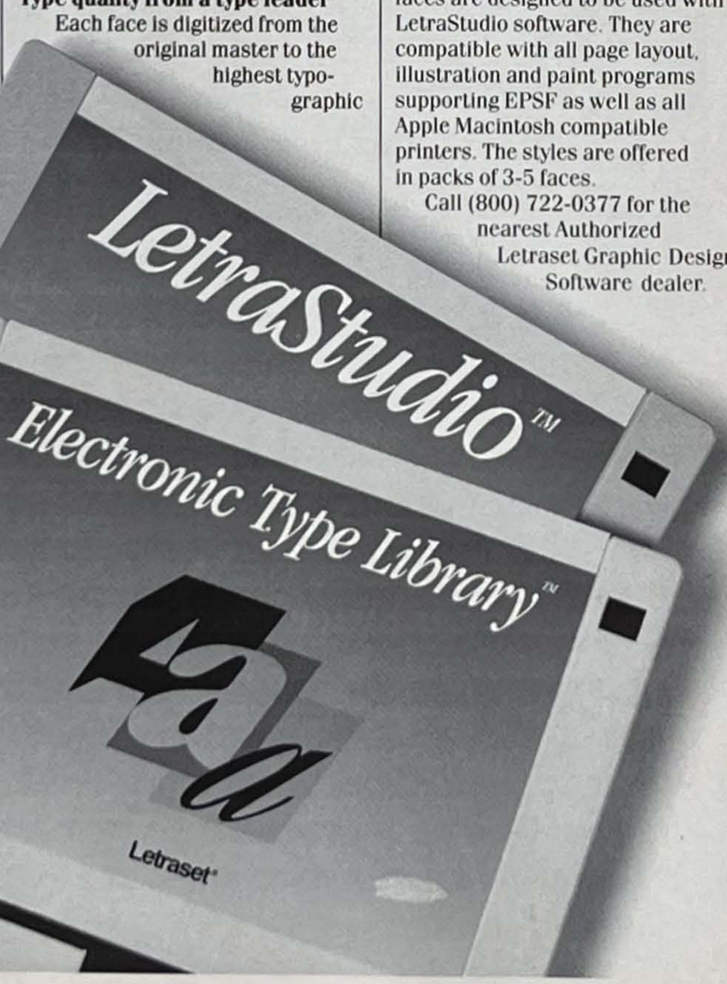
October): $495; Ready,Set,Go! 4.5: $495
40 Eisenhower Drive
Paramus, N.J. 07653
(201) 845-6100

Linotype Co.
Linotronic 200 (replaces Linotronic 100):
$28,950 (20-Mbyte hard disk) and $34,950 (80-Mbyte hard disk);Linotronic 300: $67,000;
Linotronic Type Library: $185 to $370
425 Oser Ave.
Hauppauge, N.Y. 11788
(516) 434-2000

MacroMind Inc.
VideoWorks II: $295; The Accelerator: $195
1028 W. Wolfram St.
Chicago, Ill. 60657
(312) 871-0987



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Commercial Script
Compacta
Compacta Italic
Compacta Bold
Corinthian Light
Corinthian Medium
Corinthian Bold
Corinthian Extra Bold
Crillee Italic
Crillee Extra Bold Italic
Demian
FRANKFURTER
Frankfurter Medium
Freestyle Script
Gillies Gothic Extra Bold Shaded
Harlow
Harlow Solid
Helvetica Medium Condensed
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Premier Lightline
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Tel 08 7647760

Switzerland
Tel 01 8106266

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Tel 01 928 3411

Letraset USA
Tel 1 201 845 6100

Mactography
PostScript Type Sampler: $49.95
326D N. Stonestreet Ave.
Rockville, Md. 20850
(301) 424-1357

MAGICorp Ltd.
$10 to $22.50 per slide
50 Executive Blvd.
Elmsford, N.Y. 10523
(914) 592-1244; (800) FOR MAGI

Management Graphics
Easy Slider software: $149.95; $4.95 to $9.95 a slide
1401 E. 79th St.
Minneapolis, Minn. 55425
(612) 854-1220

Matrix Instruments Inc.
SlideWriter: $11,795
1 Ramland Road
Orangeburg, N.Y. 10962
(914) 365-0190

Microsoft Corp.
Microsoft Word 3.02: $395; Microsoft Chart: $125; PowerPoint 2.0: $395
16011 N.E. 36th Way, Redmond, Wash. 98073
(206) 882-8088; (800) 541-1261

Microtek Lab Inc.
MS300-A: $1,895; 400G: $3,995
16901 S. Western
Gardenia, Calif. 90247
(213) 321-2121

Mitsubishi Electronics America Inc.
DiamondScan 19-inch Color Monitor: $2,670
991 Knox St.
Torrance, Calif. 90502
(213) 515-3993

NCR Corp.
1700 S. Patterson Blvd.
Dayton, Ohio 45479
(513) 445-5000; (800) 222-1235

New Image Technology
MacScan flat-bed scanner: $1,995; TextScan OCR software: $395
9701 Philadelphia Court
Lanham, Md. 20706
(301) 731-2000

New York School of Visual Arts
209 E. 23rd St.
New York, N.Y. 10010
(212) 679-7350

NoRad Corp.
dB60 Radiation/Glare Shield: $129
1549 11th St., Suite 205
Santa Monica, Calif. 90401
(213) 395-0800

North Carolina State University School of Design
P.O. Box 7701
Raleigh, N.C. 27695-7701
(919) 737-2202

Novell Inc.
NetWare (not shipping yet)
122 E. 1700 South,
Provo, Utah 84601
(801) 379-5900

nView Corp.
MacView Frame: $1,695
11835 Canon Blvd., Suite C-101
Newport News, Va. 23606
(804) 873-1354

Olduvai Corp.
FontShare: $295; Read-It: $395
7520A Red Road
S. Miami, Fla. 33143
(305) 665-4665

Paracomp Inc.
Swivel 3D: $395
123 Townsend St.
San Francisco, Calif. 94107
(415) 543-3848

Pixelogic Inc.
ProViz (gray scale): $1,095; ProViz Color: $1,695
800 W. Cummings Park, Suite 2900
Woburn, Mass. 01801
(617) 438-5520

Platt College
6250 El Cajon Blvd.,
San Diego, Calif. 92115
(619) 265-0107

Polaroid Corp.
MP4 Copy Camera: $3,100 to $5,600 depending on configuration
784 Memorial Drive,
Cambridge, Mass. 02139
(800) 225-1618

Pratt Institute
200 Willoughby Ave.,
Brooklyn, N.Y. 11205
(718) 636-3600

Pre-Press Technologies Inc.
SpectreMatch: $3,000; SpectrePrint: $6,000; SpectreMatch/Print: $5,000
543 Encinitas Blvd., Suite 114
Encinitas, Calif. 92024
(619) 753-0194

Quark Inc.
Quark XPress 2.0: $795
300 S. Jackson St., Suite 100
Denver, Colo. 80209
(303) 934-2211; (800) 543-7711

QMS Inc.
ColorScript printer: $21,995
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Mobile, Ala. 36689
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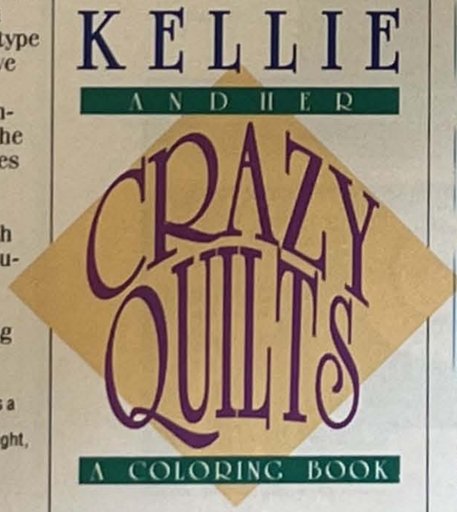
LetraStudio lettering software gives you real creative control over all your display typography. You can manipulate and customize type to achieve the maximum creative potential in each Letraset face. Your designs will get more attention while adding character to the overall message. These examples show just a few of the ways you can create exciting typography. LetraStudio software works with all Letraset software design solutions including Ready,Set,Go!™ page layout software and ImageStudio™ image processing software.

◄ An extra dimension was added to the type with LetraStudio software and combined with art created on Adobe Illustrator '88.

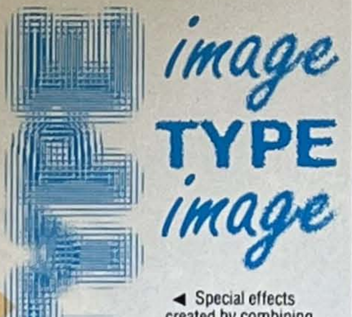
Type: Helvetica

◄ Spot art is easy to create—the box shapes were produced in LetraStudio software and then the type was stretched while in position.



► LetraStudio type distortion option creates a focal point for this cover design. There are 8 different options plus running text along straight, circular or arbitrary curves.

Type: Letraset University Roman Bold

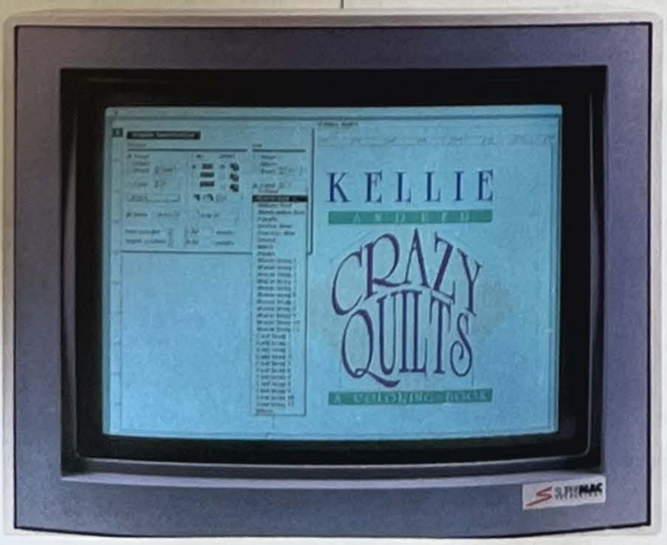


◄ Special effects created by combining a Letraset Electronic Type Library font and ImageStudio software. Most page layout and art software for the Macintosh is supported by LetraStudio software.

Type: Helvetica & Freestyle Script

◄ The character of a beautiful letter is enhanced by selecting one of the many optical distortions available.

Type: Letraset Algerian



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TrueCapture 324 board: $2,495; 8-bit video card: $1,595; 24-bit video card: $3,495 (for Mac II only)
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(408) 446-4090

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Providence, R.I. 90203
(401) 331-3511

Saatchi and Saatchi
375 Hudson St.,
New York, N.Y. 10014-3620
(212) 463-2000

Scitex America Corp.
Scitex Visionary system: Design Station, $13,600; Primary Design Station, $31,000; Gateway, $80,000
8 Oak Park Drive,
Bedford, Mass. 01730
(800) 225-8336

SetPaths: available on CompuServe and Genie

Sharp Electronics Corp.
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Silicon Beach Software Inc.
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NuVista: $4,250 (2 Mbyte), $5,995 (4 Mbyte)
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Unda Color Design and Production System
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East Hanover, N.J. 07936
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The Voyager Co.
Voyager interactive videodiscs: $50 to 120
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WordPerfect Corp.
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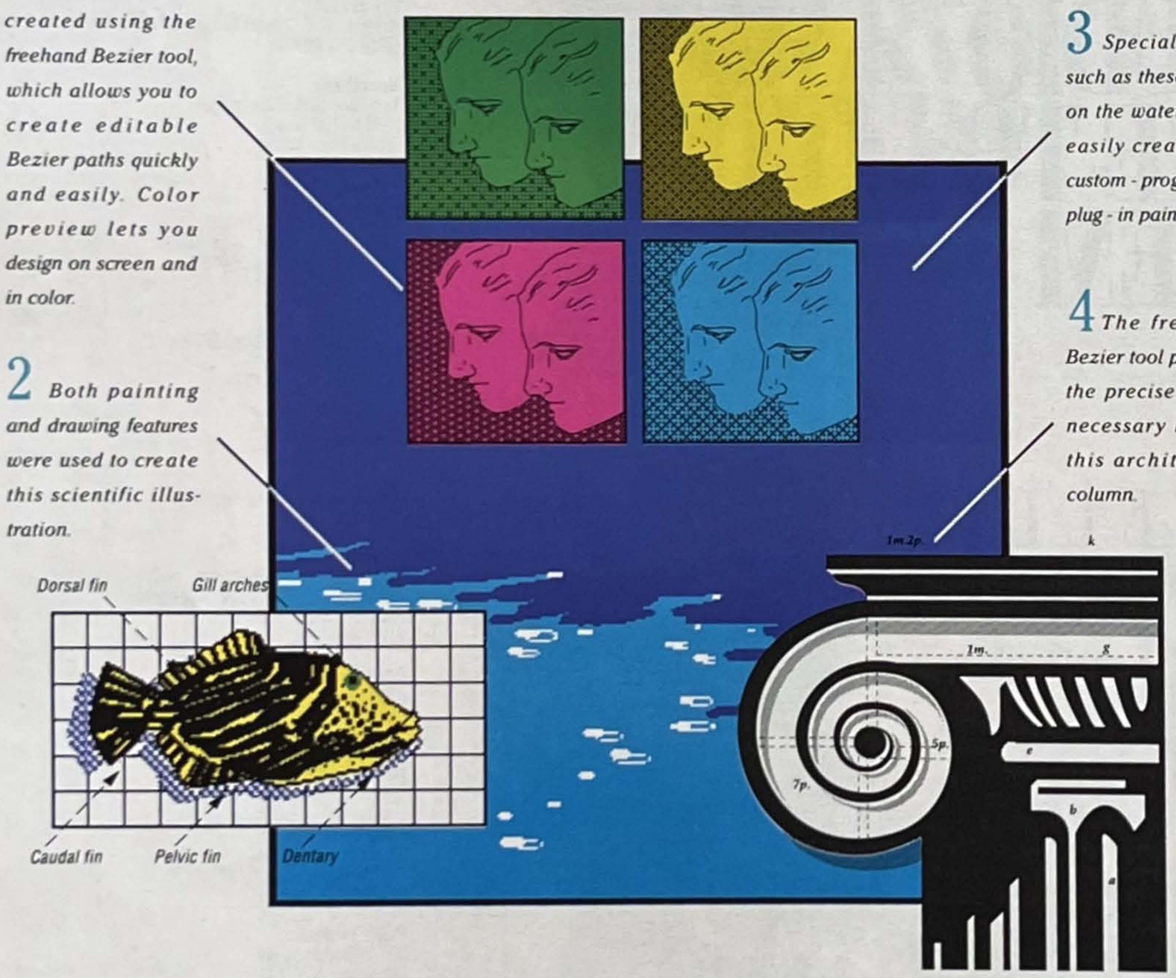

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GRAPHIC ARTS GLOSSARY

This GA Glossary covers terms used in "The incredible importance of Scanners," "Color pre-press on the desktop," and "KNVB's Macs go video." For a more complete GA Glossary, see MacWEEK's May 17 Graphic Arts Supplement.

2-D animation — the art of showing two-dimensional objects in motion on a single plane. If the object is made to shrink or grow larger, it may be called two-and-one-half dimensional animation. Two-dimensional drawings have height and width.

3-D animation — the art of showing three-dimensional objects in motion in an apparent 3-D space. The 3-D illusion is created on a two-dimensional computer screen by programs that can generate a series of perspective renderings of an object viewed from different angles as it passes. The rendered images are rapidly page-flipped to create a 3-D illusion. 3-D drawings have height, width and depth.

bit map — an array of bits or dots rather than character outlines that make up an image. Most scanned images are converted to bit maps for editing and printing. The bit-mapped arrangement varies with scanner resolution and file format.

camera — When a 3-D animation program refers to what the "camera" sees, it is talking about what you see on the screen.

CCD — charge coupled device, a semiconductor device used as an optical sensor that serves as the heart of an optical scanner.

cel animation — the technique of individually drawing each frame of an animation and changing each frame slightly. This produces motion when frames are played back at normal speed.

cell — units of a scanned image. The image area is divided into repeated groups of picture elements (see "pels") called cells. Each cell can include four pixels across and four down (4-by-4), six across and six down (6-by-6), etc. Larger cell sizes can display more gray levels, but they create a coarser dot pattern for a given output resolution, thus they look better at higher resolutions.

color separation — activity performed on a lithography camera or scanner that breaks a photo into the four primary colors by exposing them onto four different pieces of film.

compression — a method of compressing scanned files to a more manageable size for storage. Unfortunately, no compression standard exists at present; each scanner company uses its own method.

continuous tone — any item, such as a photograph, with densities that change from dark to light in infinite steps (as opposed to a halftone, which breaks the photo into large and small dots).

cyan —one of the four process colors. Cyan has a blue appearance.

delta compression — a method of recording only the changes between frames in an animation rather than recording each complete frame. This technique can save memory, and delta compressed animations can run faster.

dithering — a technique that simulates gradations of gray by using dot patterns. It involves turning elements in each cell of the image area on (making it black) or leaving it off (making it white). The more elements that are turned on, the darker the cell appears. Most scanners dither images automatically and convert them to bit maps (see "halftone").

dpi — dots per inch, refers to the resolution of display input or output devices. The Macintosh screen displays pixels at a rate of 72 dpi and the LaserWriter prints pixels at 300 dpi.

digitizing — the process of converting an image or text into a digital file that can be stored, enhanced, printed and otherwise manipulated by a computer with appropriate software.

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GRAPHIC ARTS GLOSSARY

EPSF — Encapsulated PostScript Format, a version of Adobe's PostScript language that functions specifically as an interchange format. It encodes vector, raster and text information; its files are exactly the same for IBM and Apple environments.

flatbed scanner — a scanner with a fixed copy board, like those of copiers, on which material to be scanned is placed. Unlike sheet-fed scanners, flatbed types allow copying from books and magazines. They also allow precise positioning of originals so that no misalignment occurs during scanning.

gradient — a series of colors with consecutive changes in hue, saturation and/or luminance values between a starting and ending color.

graphics — consist of points, lines, arcs and formulas that describe the geometry of an object. Examples of graphics include line illustration, graphs, charts, diagrams and maps.

gray-scales — the range of gray values that can be scanned and processed. Scales can vary from 16 levels to 256 levels. The higher the gray-scale capability and resolution, the better the image quality.

halftone — describes a photograph that has been broken into a pattern of small dots at a resolution from 65 vertical and horizontal lines per inch for newspapers to 120 or more for magazines. When printed, the halftone closely simulates the appearance of the original photograph. Scanners simulate this process by dithering to produce gray-scales.

Handshake — Scitex's proprietary page-description language for pre-press applications. Scitex has made the specifications public.

in-betweening — or "tweening," see definition for "morphing."

image — an array of pixels defining the tonality, color or luminance of every point in the picture. Image examples include photographs, transparencies, video, wire photos and continuous-tone illustrations.

magenta — one of the four process colors. magenta has a red/pink appearance.

morphing — short for metamorphosing, morphing means gradually changing from one shape to another, like changing from a brick into a hot air balloon.

music library — libraries of stock music for which rights have been granted, covering a vast range of styles, tempos and moods. This music is available for use in many types of productions, including industrial videotapes made with desktop video techniques, for fixed licensing fees.

NTSC — National Television Standards Committee, used to label the technical standards for broadcast video in the United States, Japan and a few other countries. Great Britain and much of Europe uses a different standard called PAL (Phase Alternating Line).

OCR — optical character recognition, the ability to "read" printed text (characters) and convert it to digitized files that can be saved on disk and edited as any text file.

page — two-dimensional arrangement of typeset text, graphic and image content.

Pageplan — Crosfield's proprietary page-description language for pre-press applications. Crosfield has made the specifications public.

pel — a binary picture element that can be black or white.

PICT — the file format generated by the Macintosh display language QuickDraw. Object-oriented, PICT files are composed of QuickDraw commands.

PICT II — the PICT file format enhanced for color and gray-scale graphics. PICT II uses the color QuickDraw commands developed for the Macintosh II.

picture element — smallest unit of a digitized picture; see pel and pixel.

pixel — a picture element that contains gray-scale information.

PMS colors — Pantone Matching System, a colorant mixture system that has become the de facto standard for color printing. PMS color guides and approved inks provide a standard method of designating and controlling specific colors.

PostScript — a page description language from Adobe that describes the complete page including text, graphics, and images intended for printing on raster output devices. It defines all page elements as mathematically scaleable

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formulas. Output resolution depends on the resolution of the output device. The same PostScript file can be sent to a low-resolution LaserWriter or a high-resolution imagesetter. PostScript has become the de facto standard page-description language for electronic publishing. Display PostScript allows true WYSIWYG of a page on a computer screen.

process color — varied percentages of cyan, magenta, yellow and black inks in a screen pattern for printing.

raster graphics — pixels (picture elements) that combine to form the picture. Raster graphics are not defined objects.

RGB — red, green and blue, the signal that the Mac II puts out. It takes a video encoder to change RGB to NTSC. Because RGB signals keep the three component colors separate, they don't suffer from the fringing and bleeding problems of NTSC.

RIFF — Raster Image File Format, Letraset's file format for graphics. It was developed for ImageStudio and is used by many scanners.

RIP — Raster Image Processor. Typographic systems must define the exact location of a block of copy in geometric terms and the characters in a typographic system are defined as codes, usually ASCII codes. It is only when the typographic image is converted for output (using a RIP) that the codes retrieve the geometric outline of the character from memory and convert that outline into a pixel-by-pixel rendition of the letterform in the requested size and resolution.

scanner engine — the basic scanner electro-optical mechanism. As is the case with laser printers, some manufacturers supply engines used by other scanner vendors, such as Microtek for Abaton and AST and Canon for Hewlett-Packard.

scan rate — the speed at which a scanner reads text or images. It is usually expressed in terms of "seconds per page." Like rated printer speeds or EPA gas mileage figures, advertised scan rates are maximums that are attained only under optimum conditions.

SPI — samples per inch, a term used with scanners as another way of saying dots per inch. It represents the number of pixels the scanner reads for every inch of scanning.

spot color — color within a page layout, usually a single graphic or body of type such as drop caps or rules. Spot color is often specified with a single PMS color.

story board — a series of drawings that represent key frames of a video or film. Story boards are used in the planning stage of a production to help visualize the final product.

TARGA — Truevision Advanced Raster Graphics Adapter. TARGA is a trade name for a series of high-performance graphics boards marketed by Truevision Inc. TARGA boards plug into personal computers and convert an analog video source into digital form. Images can be captured or scanned into TARGA format from video cameras, videotape, 35mm or flatbed scanners and then edited in full color.

TIFF — Tag Image File Format, a widely supported format for scanned images. TIFF was designed by Aldus and Microsoft to promote the interchange of digital images for electronic publishing applications. TIFF24 is an extended version for 24-bit scanners and supports a wide range of image resolutions and color encoding methods.

VCR — home VHS, Beta or 8mm deck.

vector graphics — object-oriented, geometric graphics. The objects in a geometric system are defined mathematically, e.g., a circle is defined by the location of its center and its radius.

video encoder — a device that changes the RGB output of a computer into NTSC video.

videotape format — over 15 NTSC video formats are in use today, and more are on the horizon. Those in common use, in order of arguable ascending video quality, are: VHS, Beta, VHS HQ, 8mm, SuperBeta, 3/4 inch, Super VHS, 3/4 inch SP, BetaCam, MII, BetaCam SP, 1 inch, D2, D1. They range in price from several hundred dollars to several hundred thousand dollars.

VTR — Videotape recorder.

wipe — a type of transition between two images. A good example would be curtains and a window. When you close the curtains, you are "wiping" the curtain image over the window image. A curtain pattern is one of many forms a wipe can take.

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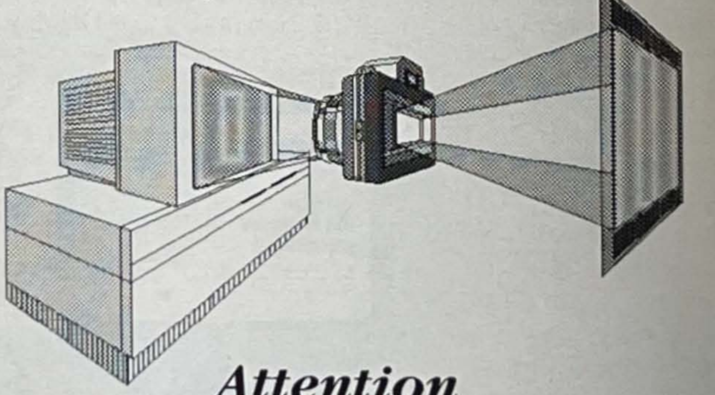

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desktop publishing

The devil's dictionary

BY EZRA SHAPIRO

ASCII, *n.* A tiny tribe of Barbarians that achieved its place in history by sacking the Roman alphabet. The Ascii were eventually defeated by their enemies, the Gothics, the Uncials and the Italics.

bleed, *v.* To extend artwork beyond the edge of the document, thereby covering the entire page. So named because of the effect of this technique on the printing budget.

copyright, *n.* The indisputable common-law privilege held since time immemorial by owners of optical scanners to reproduce anything they can get their hands on as clip art.

desktop, *adj.* Pertaining to the surface of a piece of furniture, a wall or a sheet of paper. Desktop publishing is defined as printing text and graphics on a blotter, note pad or some other paper object found on the top of a desk. Desktop presentation refers to reproducing the same material on 35mm slides so it may be projected onto a wall. Desktop communications involves beating one's head on either a desk or a wall in a rhythmic pattern known as the binary code.

dingbat, *n.* Edith Bunker.

disk, *n.* A flat, circular object used for storage of computer data in much the same fashion as pizza is used for storage of pepperoni.

documentation, *n.* What passes for humor in the computer industry. A transcript of Saturday Night Live as hosted by Torquemada.

em dash, *n.* A hyphen with delusions of grandeur.

fax, *n.* The ultimate in retrograde technology. Using thousands of dollars' worth of equipment, a handwritten note can be scanned, digitized, transmitted and finally reproduced as ... a handwritten note! The high-tech response to the postage stamp.

flush, *v.* Align type to the left or right, thereby beating a pair of aces.

font, *n.* Loosely, a typeface or family of typefaces. A bit-mapped font is one that displays a typeface on the screen of a computer. Typefaces for laser printers, which must be kept in the Blessed System Folder, are known as baptismal fonts.

GIF, *n., abbrev.* A format for color graphics files immortalized by the young Ronald Reagan in a film about college computing. Almost everyone recalls his famous last line,"Win one for the GIFFER."

gray-scale, *n.* Tarzan's family name.

grid, *n.* A system for layout that divides the page into rectangular regions, much like a football field. Best suited for large documents, as the ruler lines show measurements in yards.

groupware, *n.* Software designed to be used in a communal setting, such as a hot tub. Brought to you by minds similar to those that gave you Rolfing, EST and Geraldo Rivera.

H & J, *n.* A chain of restaurants known for its inedible fried clam dinners.

halftone, *n.* A graphical child of mixed parentage, in this case fathered by photography and borne by printing.

hairline, *n.* A very thin line, or rule. A hairline that extends into the margins of the page is said to recede.

Helvetica, *n.* The Wonder Bread of typesetting.

hypertext, *n.* A system for linking regions of text and graphics to other regions of text and graphics to implement a kind of computerized stream of consciousness designed to facilitate ... oh, never mind.

interface, *n. 1.* The look and feel of a software program, as determined by lawsuit. *2.* An attempt to connect two devices that cannot and should not be connected, in defiance of God, man and the manufacturers.

newsletter, *n.* According to vendors of desktop publishing software, anything stuffed into a three-column format regardless of content, style or quality.

object orientation, *n.* The process of training an object to do what you want it to do, usually held the first week of the new semester.

page makeup, *n.* A cosmetic treatment applied to ugly text in the vain hope of making it more appealing to the reader.

pica, *n.* A unit of measure, by convention larger than a smidgin but smaller than a whole bunch. Frequently divided into smaller units, called points, each of which is smaller than a smidgin but larger than a hair.

PICT, *n., abbrev.* A Celtic tribe renowned for painting themselves blue and dancing naked in the forest.

PMS, *n.* The Pantone Matching System, a color specification system for printing, intended to simplify the mixing of inks. Some colors so specified are known to produce cramps and other symptoms of distress.

pre-press, *v.* What you did before polyester.

printer, *n. 1.* A human being whose sole aim in life is to make mincemeat of the graphic artist's work. *2.* A mechanical device with exactly the same objective.

proof, *n.* A test printing of a document. After an indeterminate number of such tests have failed (usually no fewer than five and no more than eight), the word proof changes meaning to indicate the strength of the alcoholic beverage needed to expedite the process.

GORDON STUDER

raster, *n.* A member of a Jamaican cult; e.g., Bob Marley.

register, *v.* To send the warranty card to the manufacturer of a desktop publishing product. The owner of the product is then entitled to wear a registration mark, which looks like a miniature archery target, either on a pendant or branded into the center of the forehead.

runaround, *n.* Ragged text that vaguely conforms to the outline of a graphic. Mistakenly hailed as a recent triumph of desktop publishing, computer users actually have been getting it from manufacturers for some time now.

separation, *n.* A method of dividing colors into black-and-white components for printed output. When no output is desired, the process of dividing colors into black and white is called segregation.

serif, *n.* A teensy-weensy crossbar attached to the ends of letterforms by malevolent typographers. According to popular legend the first serif was designed at Nottingham.

spelling checker, *n.* Software designed to replace human proofreaders, substituting speed and convenience for intelligence. As most spelling checkers are not smart enough to evaluate word choices baste on contacts, they are not as youthful as one might hope.

spreadsheet, *n. 1.* The daily list of odds for gamblers who bet on basketball and football games. *2.* A type of software, formerly characterized by its ability to manipulate columns of numbers, that now incorporates page layout, graphics, text handling, macro programming, database management and the kitchen sink.

word processor, *n.* Another type of software designed to be all things to all people (see spreadsheet). The only discernable difference between word processors and spreadsheets is that manufacturers of word processors claim their kitchen sinks include running water; spreadsheet vendors are not quite so brazen.

wysiwyg, *n.* Originally the name of a pompous, blustering character in a minor novel by Charles Dickens, now a derisive term for any idiot who can't tell what a printed document will look like by studying the highly accurate screen image of same. ☐

Ezra Shapiro is a contributing editor to MacWEEK and an admirer of Ambrose Bierce.

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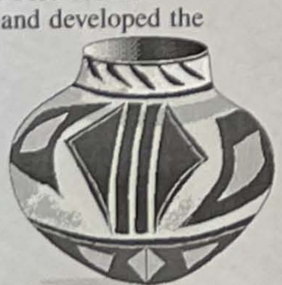

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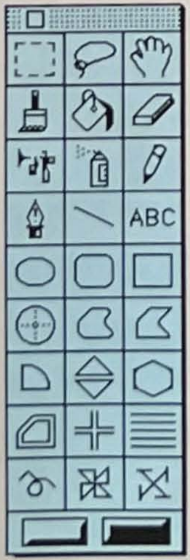

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